



## Department of Energy

ROCKY FLATS FIELD OFFICE  
P O BOX 928  
GOLDEN COLORADO 80402-0928



98-DOE-01930

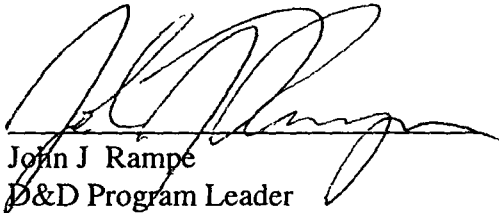
SEP 0 1 1998

Mr Steve Gunderson  
RFCA Project coordinator  
Colorado Department of Public Health and Environment  
4300 Cherry Creek Drive South  
Denver, Colorado 80222-1530

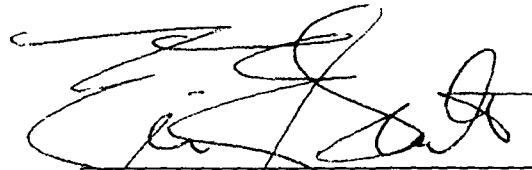
Dear Mr Gunderson

Attached is Revision 2 of the Reconnaissance Level Characterization Report (RCLR) for Building 771/774 Cluster Closure Project This document is being forwarded to satisfy Rocky Flats Cleanup Agreement Part 120 requirements for transmitting non-decision documents for review and comment This RLCR incorporates comments received from Chris Gilbreath on previous unofficial draft issues If you have additional comments, please submit them within 14 days of receipt of this letter We appreciate your support and cooperation in producing this plan

If you have any questions regarding this plan, please call John Rampe at (303) 966-6246 or Joe Springer at (303) 966-4076



John J Rampe  
D&D Program Leader  
Rocky Flats Field Office



Regina Sarter  
RFCA Coordinator  
Rocky Flats Field Office

**ADMIN RECORD**

IA-B771-A-00008

Mr Steve Gunderson  
98-DOE-01930

2

cc w/o Att  
A Weadock, EH-24, HQ  
K Klein, OOM, RFFO  
J Legare, AMEC, RFFO  
H Dalton, AMMSD, RFFO  
D Lowe, AME, RFFO  
P Golan, AMPPI, RFFO  
M Roy, OCC, RFFO  
J Karpatkin, AMCED, RFFO  
J Rampe, PPI, RFFO  
F Gerdeman, PPI, RFFO  
J Springer, MSD, RFFO  
B April, AMEC, RFFO  
R Warther, DNFSB  
G Meyer, K-H  
A Parker, K-H



## Department of Energy

ROCKY FLATS FIELD OFFICE  
P O BOX 928  
GOLDEN COLORADO 80402-0928

SEP 01 1998

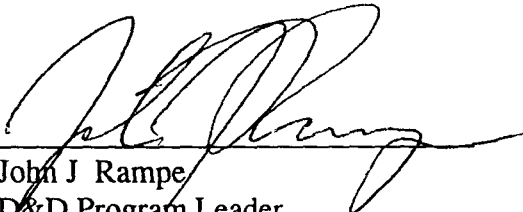
98-DOE-01929

Mr Tim Rehder  
Rocky Flats Program Manager  
U S Environmental Protection Agency  
Region VIII  
999 18<sup>th</sup> Street, Suite 500  
Denver, Colorado 80202-2466

Dear Mr Rehder

Attached is Revision 2 of the Reconnaissance Level Characterization Report (RCLR) for Building 771/774 Cluster Closure Project This document is being forwarded to satisfy Rocky Flats Cleanup Agreement Part 120 requirements for transmitting non-decision documents for review and comment This RCLR incorporates comments received from Chris Gilbreath on previous unofficial draft issues If you have additional comments, please submit them within 14 days of receipt of this letter We appreciate your support and cooperation in producing this plan

If you have any questions regarding this plan, please call John Rampe at (303) 966-6246 or Joe Springer at (303) 966-4076

  
John J Rampe  
D&D Program Leader  
Rocky Flats Field Office

  
Regina Sarter  
RFCA Coordinator  
Rocky Flats Field Office

Mr Tim Rehder  
98-DOE-01929

2

cc w/o Att  
A Weadock, EH-24, HQ  
K Klein, OOM, RFFO  
J Legare, AMEC, RFFO  
H Dalton, AMMSD, RFFO  
D Lowe, AME, RFFO  
P Golan, AMPPI, RFFO  
M Roy, OCC, RFFO  
J Karpatkin, AMCED, RFFO  
J Rampe, PPI, RFFO  
F Gerdeman, PPI, RFFO  
J Springer, MSD, RFFO  
B April, AMEC, RFFO  
R Warther, DNFSB  
G Meyer, K-H  
A Parker, K-H

**Building 771/774 Cluster Closure Project**

**Reconnaissance Level Characterization Report**

**Revision 2**

**AUGUST 8, 1998**

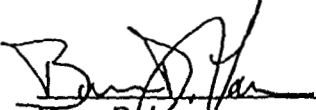
**Prepared for the U. S. Department of Energy**



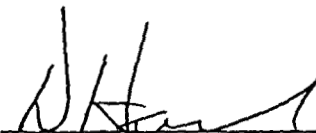
APPROVALS

Document Title Building 771 Reconnaissance Level Characterization Report

Prepared By

 8/6/98  
\_\_\_\_\_  
Brian D. Larsen Date  
Bldg 771 Closure Planning

Approved By

 8/6/98  
\_\_\_\_\_  
Douglas Hamrick Date  
Bldg 771 Closure Project Mgr

## TABLE OF CONTENTS

## APPENDIX A - BUILDING 771 RECONNAISSANCE LEVEL CHARACTERIZATION REPORT PROCESS EQUIPMENT HAZARD ANALYSIS

## 1 0 INTRODUCTION

The following information has been compiled to document a detailed walkdown, process knowledge and analytical based characterization of the 771/774 cluster. The 771/774 cluster consists of the main 771 and 774 buildings and all additions and structures attached to or immediately adjacent to buildings 771 and 774. This report has been prepared prior to the full deactivation of the facility to provide a reference that will be used to plan the deactivation and ultimate decommissioning of the 771/774 cluster. The report is divided into three primary sections, 1 A written description of the facility including its history and descriptions of the many materials processed, 2 Table 1 describing the process equipment and associated structures, and 3 Appendix A listing the process equipment and the known hazards with the levels or physical forms expected.

## 2 0 PURPOSE

To establish a preliminary estimate of the type of contamination or safety hazard present.

The type and tractability of radiation and hazardous substances contamination and physical hazards will be evaluated.

This report will describe the presence of materials and isotopes that will be considered in planning the closure of the 771/774 cluster. The importance of the presence of these items is based on both worker safety and waste disposal/regulatory concerns. Each of the isotopes or materials has been identified through investigation of facility related documents, a thorough walk down of the facility, a review of historical data and process knowledge. The inclusion of the listed hazards is as complete as possible without delaying the creation of this document for the collection of additional empirical analytical data. The isotopes and materials of concern are contained in or are components of the process equipment and non-structural building systems or utilities. Residual contamination may also exist in the building structure. This Reconnaissance Level Characterization Report (RLCR) may be used as a basis to define the required sampling needed to support facility deactivation, decontamination and structural demolition. Additionally, the RLCR provides information to support ALARA (As Low As Reasonably Achievable) planning for the protection of the workers and environment.

The quantities and locations of Special Nuclear Material (SNM) described in this report are approximations based on field analysis. This analysis is affected by other equipment components in the vicinity of that which is being reviewed. These affects may produce error or increased uncertainty in the analytical result. Precise location of the hold-up is not known and it is expected that the hold-up is spread throughout tanks, gloveboxes, ventilation ducts and piping. The general quantities and location of the SNM is known well enough to plan its remediation. The specific information will not be known in some locations until physical entry is



gained during deactivation and decommissioning. Much of the SNM described in this report is manually unrecoverable and dispersed throughout system components. This material may be in the form of sludge and scale, or is deposited in porous substrates. Enough information is available on the range and type of contamination and hazards present to bound the conditions and facilitate the planning for a safe and compliant remediation and waste management. This RLCR meets the required purpose of providing a summary level overview of the hazardous materials, contamination, and the hazards associated with the 771/774 cluster including the type, general location, and quantity. Specific information about these parameters will be determined when activities to remove the contamination and hazards are planned and carried out. The process for planning and conducting the work is discussed in the 771/774 cluster Decommissioning Operations Plan DOP. Intrusive measures such as dismantling equipment or systems is necessary to fully characterize some hazards, so full characterization will be deferred until deactivation or decommissioning activities begin in order to reduce worker exposure and to increase efficiency. Additional specific information regarding the presence of SNM in some locations is presently known; however, it cannot be stated due to material safeguard and security reasons.

### **3.0 SCOPE**

The scope of this document is to gather enough characterization information to document the characterization of the 771/774 cluster at the reconnaissance level as described in the Rocky Flats Clean Up Agreement (RFCA) and Decommissioning Characterization Protocol (DCP). Additionally, this information will be used to support the generation of specific Job Safety Analysis and D&D Characterization Programs. The RLCR is compared against proposed decommissioning activities to determine if those activities are feasible and to identify the need for quantitative in-process sampling and analysis. The facility closure process comprises six discrete phases: Major Hazard Reduction, Equipment Removal, Building Decontamination, Utility Systems Shutdown, Building Demolition and Site Remediation. The RLCR provides information to better plan for those tasks necessary to complete these phases, with the most appropriate protection to workers and the environment.

### **4.0 REFERENCES**

- Basis For Operation Building 771 - Kaiser Hill LLC
- Chew & Associates, History for Building 771 at the Rocky Flats Plant, April 1992 (ref. Contract No. 06S10044)
- Waste Stream Residue Identification and Characterization (WSRIC) for Building's 771 and 774
- Building 771 Chemical Control Database

### **5.0 TERMS AND ACRONYMS**

ACM - Asbestos Containing Materials  
ALARA - As Low As Reasonably Achievable  
Am - Americium  
Be - Beryllium

Blx - Benelex  
 Cd - Cadmium  
 CFC's - Chloro-fluoro-carbons  
 Cr - Chromium  
 DOE - Department Of Energy  
 DOP - Decommissioning Operations Plan  
 DQO - Data Quality Objective  
 EPA - Environmental Protection Agency  
 HASP - Health and Safety Plan  
 HEPA - High Efficiency Particulate Air (filter)  
 HCl - Hydrochloric Acid  
 HF - Hydrofluoric Acid  
 Hg - Mercury  
 HNO<sub>3</sub> - Nitric Acid  
 HVAC - Heating Ventilation and Air Conditioning  
 MFP - Mixed Fission Products  
 NDA - Non-Destructive Assay  
 OSHA - Occupational Safety and Health Agency  
 Pb - Lead  
 PCB - Polychlorinated Biphenyl's  
 PPE - Personal Protective Equipment  
 Pu - Plutonium  
 RFETS - Rocky Flats Environmental Technology Site  
 RLCR - Reconnaissance Level Characterization Report  
 RCRA - Resource Conservation and Recovery Act  
 SNM - Special Nuclear Material  
 TCE - 1,1,1 Tri chloro ethylene  
 TSI - Thermal Systems Insulation  
 WAC - Waste Acceptance Criteria  
 WMP - Waste Management Plan  
 UST - Underground Storage Tank  
 U - Uranium

**Deactivation:** The process of placing a facility in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program that is protective of workers, the public and the environment until closure is complete. Actions include the draining and/or de-energizing of non-essential systems, removal of stored radioactive and hazardous materials and related actions. As the bridge between operations and closure, based upon facility-specific considerations and final disposition plans, deactivation can accomplish operations-like activities such as final process runs and also decontamination activities aimed at placing the facility in a safe and stable condition. Deactivation does not include decontamination necessary for the dismantlement and demolition phase of closure, i.e., removal of contamination remaining in fixed structures and equipment after deactivation. Deactivation does not include removal of contaminated systems, system components, or equipment except for the purpose of accountability of SNM and nuclear safety. It also does not include removal of contamination except as

incidental to other deactivation or for the purposes of accountability of SNM and nuclear safety

**Closure.** Takes place after deactivation and includes surveillance and maintenance, decontamination and/or dismantlement. These actions are taken at the end of the life of the facility to retire it from service with adequate regard for the health and safety of workers, the public and protection of the environment. For those buildings in which no deactivation occurs, the term includes characterization as well as the above activities. The ultimate goal of closure is unrestricted release, or if unrestricted use is not feasible, restricted use of the site.

**Decontamination:** The removal or reduction of radioactive or hazardous contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning or other techniques to achieve a stated objective or end condition.

**Dismantlement.** The disassembly or demolition and removal of any structure, system, or component during closure and satisfactory interim or long-term disposal of the residue from all or portions of the facility.

**Facilities.** Buildings and other structures, their functional systems and equipment and other fixed systems and equipment installed therein, outside plant, including site development features such as landscaping, roads, walks and parking areas; outside lighting and communication systems, central utility plants; utilities supply and distribution systems; and other physical plant features.

**Hazard.** A source of danger (i.e., material, energy source or operation) with the potential to cause illness, injury, or death to personnel, damage to a facility or the environment without regard for the likelihood or credibility of accident scenarios or consequence mitigation.

## **6.0 BUILDING HISTORY**

This section provides a brief history of the Building 771/774 cluster, including significant abnormal occurrences. The processes and events described below provide a historical account of the contamination incidents attributing to the clusters current condition.

Building 771 which began operations in 1953, housed five major groups: Plutonium Recovery, Plutonium Special Recovery, Plutonium Chemistry, Plutonium Metallurgy Research and the Analytical Laboratory. Plutonium Recovery processed a variety of plutonium-bearing residues to recover as much plutonium as was economically feasible. Special Recovery Operations processed scrap metal and oxide residues containing elements and isotopes that could have otherwise contaminated or diluted the War Reserve plutonium stream. Plutonium Recovery research and development groups in Building 771 supported and developed methods for recovering, separating and purifying actinides. The Plutonium Metallurgy group assisted the design agencies and plant production in developing processes. Liquid and solid samples were received by, or prepared in, the Building 771 Analytical

Laboratory Samples were analyzed for plutonium, americium, uranium, neptunium and other radioactive isotopes. The laboratory was also used to analyze solutions for normality and for impurities present in the process streams.

As one means of identifying the hazards in the building, past incidents were reviewed. Most of the abnormal occurrences occurred during production. Hazards inherent in the production processes such as operating equipment and production volumes of various chemicals are no longer present. Also, modifications to the building and improvements in conduct of operations based on past incidents minimize the potential for reoccurrence of the major events and many of the less severe events.

A review of the Chronology of Incidents Reported in Building 771 is presented in Chew & Associates, *History for Building 771 at the Rocky Flats Plant*. Reports of radiological contamination and inhalation increased in the mid-1970s. This was due to better monitoring equipment and greater attention to monitoring of personnel. Additionally, some reportability limits were lowered. Beginning in the early 1980s, incidents of exceeding nuclear material safety limits began to appear as incident reports. Major incidents are summarized below, as extracted from the Chew Report and recent interviews with building personnel.

A large plutonium metal chip fire occurred in the Room 180 area in September 1957, seriously contaminating the entire area (metals laboratory and most of the building). One drain line from Room 180 went directly to the outfall (Walnut Creek) and may have led to contamination of the creek. Decontamination of the building (except Room 180) took approximately three to six months. Room 180 was sealed for approximately four years before it was decontaminated. Contamination remains under surface coatings in the Room 180 area (as well as other regions of the operational area of the building). Extensive renovations to the area were made in the late 1960s after completion of the decontamination efforts. The Zone I exhaust filters were modified to provide improved filter seals and to repair heat stress damage caused by the fire.

Floor drains in building 771 were sealed following the 1969 fire in Building 776. Some drains in Room 180 that had been contaminated during the 1957 fire were capped in that condition. The below grade piping in Room 149 is the only other verified contaminated piping in the floor slab.

Room 148 has been heavily contaminated several times. Several incidents have contaminated the room from floor to ceiling and wall to wall. Many incidents involved nitric acid solutions spills that etched the floor or walls. These areas could not be effectively decontaminated. After the removable surface contamination was removed, floors and walls were painted over and only fixed contamination remained.

Process equipment throughout Building 771 has been used to purify large quantities of plutonium. Contamination occurred frequently in all tanks, process piping and bag in/bag out areas. Due to glovebox ventilation pressure surges that

forced liquid out of the criticality drain cups, drains occasionally overflowed This has resulted in routine floor and room contamination

In 1989, all plutonium operations were curtailed in place and there have been limited activities since this stoppage Gloveboxes were cleaned and wiped-down and the HEPA filters were replaced during the initial curtailment Although there has been no maintenance of glovebox windows gloves and bags have been replaced as necessary The criticality drains on the gloveboxes have been inspected bi-weekly per OSR surveillance requirements Except for Line 30, all criticality drains have been replaced by the new "J"- style drains

There has been no major action to remove plutonium from the ventilation ducts, however, some Non-Destructive Assay (NDA) measurements and characterization activities have occurred Some of the HVAC ducts contain hold-up that exceeds the plutonium contamination action limits (400 grams per duct run) The planned valve gasket replacement from Teflon™ to Gycon™ was not finished

Process valves have not been operated and may leak when used The cooling water supply and return system has been in limited use and the steam supply system has only been used to supply heat to the building The plant air has been used for HVAC controls and valve manipulations and the inert air supply system has not been used since the curtailment

The following buildings and structures presently make up the 771/774 cluster

<u>Building/Structure</u>	<u>Description</u>
<u>#</u>	
262	Diesel Fuel Tank
714	Hydrofluoric (HF) Storage Shed
714A	Hog shed
714B	Emergency Breathing Air Station
715	Emergency Generator
716	Emergency Generator
717	Sampling Shed
728	Process Waste Pit - UST
770	Maintenance and offices
771	Pu Operations
771A	Corridor F Office Area
771B	Carpenter Shop
771C	Nuclear Waste Packaging/Drum Counting
772/772A	Fluorine/Acid Storage Building
773	Guard Post
774	Pu Waste Treatment Facility
775	Sanitary Lift Station
T771A thru H, J thru L	Various Trailers



## 7.0 PREVIOUSLY PREPARED FACILITY CHARACTERIZATION

During the facility operating and recent risk reduction periods, data has been collected to gain a better understanding of the risks present in the 771/774 cluster. This includes management of known and suspected asbestos materials and the determination of SNM hold-up in many parts of the facility. This data has been collected in accordance with approved procedures and records are maintained by the facility management. Other significant information such as the facility Waste Stream Residue Identification and Characterization (WSRIC) exist and shall be reviewed when planning closure activities.

## 8.0 EVALUATION OF THE SYSTEMS

Protocols for the assessment and identification of characterization data have been defined. Specifically "Data Quality Objectives" (DQO) as defined by the US Environmental Protection Agency (USEPA), are designed to promote a process to efficiently prepare characterization programs. A similar process was utilized in the preparation of this report.

*The USEPA defined the DQO process as "Qualitative and quantitative statements derived from the output of each step of the DQO process that clarify study objectives, define the appropriate type of data and specify the tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions" (USEPA QA/G-4, 1994). A more detailed explanation of the EPA DQO process and the need for additional sampling is covered in the Building 771 Decommissioning Operations Plan (DOP).*

Assessment of the 771/774 cluster gloveboxes and other process systems for the composition of this report included the following process. Each of the established work sets<sup>1</sup> were evaluated and a list of known and expected contaminants was recorded. To perform this assessment decommissioning experience and other factors such as process knowledge and engineering evaluations were used. Investigations conducted during walkdowns of the facility have yielded additional observations and the identification of potential hazardous contaminants. Each of these contaminants present the need for worker safety controls and have regulatory standards and limits applied to handling and disposal.

It is known from decommissioning experience gathered at Rocky Flats and other DOE and commercial nuclear facilities that common building materials and normal maintenance items contain materials that are presently considered to be hazardous to both workers and the environment. An example is Thermal Systems Insulation (TSI) installed on equipment prior to 1977 was commonly fabricated with asbestos.

---

<sup>1</sup> The 771 facility has been divided into approximately 80 discrete units or work sets. These sets are made up of individual process lines or specific room(s) in the 771/774 facility cluster.

fibers. Additionally lead was commonly used in the manufacture of paint and it is expected that most of the painted surfaces for buildings of this era contain lead.

The presence of a particular hazard in many cases is a yes or no fact and the establishment of specific levels may not impact work planning.

Example. Lead shielding in the form of plate, lead lined gloves and leaded glass windows are present on many of the glove boxes and tanks. Lead will require special handling, disposal requirements and safe work instructions for the removal of lead plate, gloves and glass. These will have to be evaluated prior to commencing work activities. These forms of lead can be adequately quantified in place, i.e. dimensions/volume of the plate and glass, number of gloves (a known standard quantity of lead per glove must be previously established). The regulatory limit for elemental lead is 5mg/L and any substance containing greater than this amount is classified as EPA waste code D008.

In cases where the measurement of specific levels or quantities are needed as determined by the specific Job Safety analysis, an evaluation will be performed before each deactivation or decommissioning activity is performed. These hazards are primarily those where Personal Protective Equipment (PPE) and engineering controls are established and adequately protect the worker, but quantification of the hazard in the waste stream is required. Sampling will be conducted in accordance with established protocols such as EPA SW-846 and the Rocky Flats Radiological Controls Manual.

Example. Chromates are expected to have been included in cooling water and water wall shielding systems. Typical applications utilizing chromates as a corrosion preventative have resulted in regulated levels of chromium metal in the waste stream so it is likely that chromates will be found in cooling water systems. Concerns as to the presence of this material as a worker safety issue can be managed through the use of proper PPE, however it must be further evaluated to quantify the waste stream. The EPA has established sampling and analysis method 6010 to evaluate the presence of chromium in substances. The regulatory limit for chromium is 5mg/L and any substance containing greater than this amount is classified as EPA waste code D007.

Consideration of the potential for additional hazards that have been generated in place during the period that the facility has been shut-down must be performed. These hazards include the formation of reactive acidic salts, hydrogen gas and the in-growth of americium yielding an increase in gamma radiation. Many of these new hazards have similar characteristics to their predecessor or parent chemicals.



and thus the PPE and engineering controls utilized may be sufficient. The potential for new unrelated hazards is also possible and must therefore be considered. New PPE requirements and engineering controls will be developed as these hazards are evaluated. Here the Rocky Flats Integrated Safety Management (ISM) program becomes important in evaluating the proposed work scopes to investigate the potential for these hazards. ISM sets priorities to do the work as safely as possible, and integrate the infrastructure programs which already exist. Rocky Flats programs such as Radiation Control, Waste stream Identification, and building specific programs such as Beryllium investigations are all reviewed to insure that the work planning takes into consideration all hazards associated with the work. In the ISM process 5 functions have been defined, 1 Define the Scope of Work, 2 Identify and analyze the Hazards, 3 Identify and Implement controls, 4 Perform the Work, and augmenting 1-4 with 5 Feedback generated from both the workers, and the work process. Insitu production of a few hazards and contaminants has been previously observed and this experience will allow for contingency planning.

Example Hydrogen gas has been found in piping systems where oxalic acid corrosion of the stainless steel pipe combined with the introduction of nitric acid has occurred. The resulting chemical reactions have the potential to produce both hydrogen and nitrous oxide gases. Therefore the tap and drain operations are utilizing equipment such as explosion proof pumps and non sparking tools to access the pipe lines.

Therefore the characterization objectives for the RLCR are 1) can an estimate of the type and presence of a contaminant of concern be established from what is known today and 2) is further evaluation necessary to meet worker safety and waste disposal requirements?

Where discreet analytical data are not needed to support current planning goals, the sampling may be deferred. As deactivation of the B771/774 cluster progresses, there will be changes in both the physical and chemical constituents. Ongoing facility programs such as Tap and Drain and the SNM Removal programs will affect the characteristics of the building and equipment components. These ongoing programs have already performed various evaluations of the process systems and will also conduct sampling activities to support project goals. Current information such as the confirmation of the presence of liquids in process piping has been performed. Ongoing actions to drain these liquids will change the characteristics that affect subsequent piping and associated equipment removal.

Further assessments look towards the consideration that all likely contaminants have been identified. This concern relies on the existing WSRIC profiles to identify all contaminants in process waste streams. If the contaminant exists in a waste stream resulting from the operation of the process line, then it is assumed that the specific contaminant is present in the system today.

Example Chromium was found in the sand, slag and crucible waste streams. This contaminant has been identified in various sets and any residual materials in the systems are expected to contain regulated quantities. The EPA has established sampling and analysis method 6010 to evaluate the presence chromium in substances. The regulatory limit for chromium is 5mg/L and any substance containing greater than this amount is classified as EPA waste code D007.

#### **9 0 BUILDING AND MATERIAL BREAK-DOWN.**

The 771 facility has been divided into approximately 80 discrete units or work sets. These sets are made up of individual process lines or specific room(s) in the 771/774 facility cluster. The materials identified as items that are of concern in the characterization process are those that pose a threat to the safety of the workers and/or the environment. These hazards identified in each of the defined building sets are those items that may be present in the fixed process equipment and non-structural building components or utilities. This characterization effort makes no assumptions of those chemicals or radionuclides that may be held-up in the building structural components/concrete. Various inventory data has been obtained to support earlier building characterization and management programs. (Ref. section 4 0) These include the insitu evaluation of SNM hold-up in process piping and vessels and the identification of asbestos containing materials. A brief description of each of the 771/774 cluster work sets are shown in Table 1 of this report.

#### **10 0 ISOTOPES AND MATERIALS OF CONCERN:**

The building 771/774 cluster contains various chemicals and isotopes that will impact building closure and waste disposal actions. These two factors, worker safety and waste disposal, are guided by federal regulations and disposal site limits. Table 2 lists these hazards of concern and associates each hazard and its expected physical forms with a level of concern. The levels of concern are derived from factors including familiarity with handling or processing of the materials, and the expectation that some unknowns may exist. The table 2 levels of concern have been evaluated by both Health and Safety and Engineering personnel to examine the types of hazards present in the 771/774 cluster, and define the levels or physical forms that will require enhanced safety and engineering measures to deactivate and decommission the facility.

Example Metallic oxides are typically in a finely divided powder like form. These powders are difficult to control and have a propensity to become uncontrolled airborne particulate in normal atmospheres. Therefore oxides such as radioactive plutonium oxide, or hazardous lead oxide are considered a High level of concern. Conversely metallic oxides suspended in solution do not present a substantial

airborne problem and solid, clad and containerized metals present  
lessor concern

Table 3 describes the regulatory limits for many of the EPA regulated chemicals and hazardous metals. Not all of these materials have been identified as being associated with the 771/774 cluster, however this information has been included here for reference. Table 2-2 of the RFETS Radiation Control Manual describes the Rocky Flats Environmental Technology Site limits on the radioactive materials. These limits are established for worker safety and release to the environment. Finally Appendix A of this report, reviews each of the major components of the 81 work sets, and defines the specific hazards and levels of concern for each of those items. Additionally appendix A lists some of the materials or physical forms which have not been identified but may be present in the specific systems.

**Americium** - Isotopes of americium metal and oxides were processed in certain areas of the 771 facility. Americium is produced through the normal decay of Pu and in many cases is a contaminant of the plutonium production stream. Am is considered a global (building wide) contaminant associated with plutonium contamination.

**Plutonium** - Isotopes of plutonium metal and oxides were processed in many areas of the 771 facility. Many areas where unclad plutonium was stored or processed were involved in flood and fire situations leading to contamination of most of the facility and equipment. The manufacture, processing and handling of plutonium metal and its oxides throughout the 771/774 cluster has led to contamination of many parts of the facility. Plutonium is also considered a global contaminant.

**Uranium** - Isotopes of uranium metal and oxides were processed in a few areas of the 771 facility. Additionally uranium has been identified as a contaminant in feed and analytical solutions, leading to its presence in many of the 771/774 cluster process lines. Where uranium was identified as a component of a process it is considered a contaminant of concern. Its presence represents a minor component of the radionuclide inventory.

**Mixed Fission Products (MFP)**- Fission products such as  $\text{Cs}^{137}$ ,  $\text{Co}^{60}$ ,  $\text{Sr}^{90}$ , etc. are present in some areas of the 771 facility. These isotopes were introduced in special operations and were not part of the normal production/mission of 771/774 cluster. The source of these isotopes is a result of the production of plutonium at other DOE sites. These isotopes are impurities in the production grade plutonium stream. Residual MFP contamination can be found in a few isolated areas of the facility.

**Special Nuclear Material** - SNM hold-up has been selected as a special concern due to disposal requirements and handling concerns. Concentrations of SNM such as Pu239, Am241 and U235 holdup are present in process lines, equipment and the building structure. Insitu characterization of the SNM hold-up is presently being performed and is currently estimated to be in excess of 75 kilograms. Additional

characterization data is being collected and should be consulted for proper closure planning

**Polychlorinated Biphenyl's** - Items containing Polychlorinated Biphenyl's (PCBs) in excess of the EPA regulatory limit of 50 ppm have been identified in a variety of sources EPA issued a proposed rule [Ref Federal Register 12/6/94 62788 - 62887] amending the PCB regulations The Agency acknowledged the potential for the presence of PCBs in a wide variety of materials including

Gaskets	Paints
Small rubber parts	Plastic
Caulking	Roofing/siding materials
Ceiling tile coatings	Adhesive/tape
Plasticizer	Electrical cable insulation
Electrical components	Lighting equipment

**Asbestos Containing Materials (ACM)** - ACM in the forms of Thermal Systems Insulation and non-friable forms such as Transite and floor tile is present in many areas of the facility. Asbestos is regulated in accordance with the Toxic Substance Control Act 40CFR761 and OSHA 29CFR1926.1101 Asbestos has also been identified in many commercial materials including

Gaskets	Window caulking
Roofing/siding materials	Ceiling tile
• Floor tile and mastic	• Lab counter-tops
Pipe/duct insulation	Equipment brakes

Current ACM management practices have identified many locations where ACM exists. Additional characterization data is being collected and should be consulted for proper closure planning Consideration of asbestos as a contaminant of concern for select building materials and insulation installed prior to 1979 has been made

**Benelex** - Benelex is a brownish masonite like material. On its own benelex is relatively inert (non-flammable) however multiple approximately 0.375" benelex sheets have been glued/laminated together to increase shielding capabilities The glues used to laminate the benelex sheets are highly flammable and virtually inextinguishable Benelex is used as shielding on many gloveboxes and surrounding tank farms

**Lead** - Elemental lead has been used as shielding on many gloveboxes and components in the 771/774 facility cluster Additionally lead is present in many other materials such as dry-box gloves, leaded glass glovebox windows, brass and items such as fire suppression systems Lead metal wastes and residues are regulated in accordance with EPA 40CFR261 and OSHA 29CFR1926.62.

**Chromium** - Chromium is expected to be present in some of the B771 processes as a result of impurities in feed and analytical solutions Chromates also exist in solutions for cooling and shielding systems Chromium is regulated in accordance with EPA 40CFR261

**Cadmium** - Cadmium is expected to be present in some of the B771 processes as a result of impurities in feed and analytical solutions. Cadmium has also been recognized as a constituent of paint and plated surfaces. Cadmium is regulated in accordance with EPA 40CFR261.

**Mercury** - Mercury is known to be present in older electrical components and thermal instrumentation. Mercury contamination resulting from past mercury spills is not currently considered a contaminant of concern since it is expected that those spills were properly remediated. Elemental mercury wastes and residues are regulated in accordance with EPA 40CFR261.

**Beryllium** - Again the limited presence of beryllium can be associated with special operations in certain areas of the 771/774 cluster. Wide spread contamination associated with Be is not expected. Beryllium contamination in the 771/774 cluster has been evaluated and described in the site beryllium characterization report.

**Acidic Characteristic** - Acids including Hydrochloric (HCl), Nitric (HNO<sub>3</sub>), Sulfuric (H<sub>2</sub>SO<sub>4</sub>) and Hydrofluoric (HF) were used in the facility production processes. It is expected that radionuclide bearing acid solutions are present in piping and vessels in the facility. Additionally, salts and other residual materials from the acids are expected to be present. Acid wastes meet EPA characteristic (corrosive) properties where the pH is < 2.0.

**Basic/Caustic Characteristic** - Caustic chemicals (pH > 7) such as potassium hydroxide (KOH) and sodium hydroxide (NaOH) were used to neutralize acidic solutions. It is expected that radionuclide bearing caustic solutions are present in piping and vessels in the facility. Caustics with a pH > 12.5 are regulated in accordance with EPA 40CFR261.

**RCRA classified waste solvents** - 1,1,1-Trichloroethylene (TCE) and other solvents were used in the 771 facility. These chemicals were used for their solvent properties therefore any waste resulting from their use is regulated. Containers of unused solvents could be found in the facility during the closure process. Solvents as defined in EPA 40CFR261 including the listed and characteristic solvents are present in 771.

**Oil** - Oils such as hydraulic and machining oils were used in many areas of the 771 facility. Many reservoirs of the process equipment still contain oils, greases and other petroleum lubricants. Waste halogenated oils and resulting waste are regulated as hazardous wastes. Also see PCB's.

**Chloro-fluoro-carbons (CFC's)** - CFC's such as freon are primarily present in cooling and refrigeration units. Additionally, it has also historically been used as a cleaning solvent. CFC's are known to be present in some facility HVAC equipment.

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
1	Corridor B Office Area - This set includes all of Corridor B and Offices 116, 117, 117A, 118, 118A, 119, 119A, 119B, 119C, 119D, 124, 125, 125A, 125B, 125C, 125D, 125E, 126, 126A and 126B. Room 116 contains the connection point to the plant fiber optics system. Asbestos containing materials are expected to exist in building components such as wall board, thermal systems insulation and solid surfacing components	ACM
2	Corridor F Office Area - This set includes Room, 103, 104, 105, 105A, 105B, 107, 109, 110, 110A and 110B, Corridor F, Criticality Panel and walls. Asbestos containing materials are expected to exist in building components such as wall board, thermal systems insulation and solid surfacing components CFC's exist in window air-conditioners	ACM, CFC's
3	Locker Room Area - This set includes both the Men's and Women's locker rooms, the janitor's closet and the laundry cage in the Men's locker room This equipment consists of lockers, benches and plumbing fixtures Asbestos containing materials are expected to exist in building components such as wall board, thermal systems insulation and solid surfacing components.	ACM
4	129 Maintenance Area - this set includes Room 129, 129A, 129B, 129C, 129D, 129F, 130, 131, 132 and 132A, Dock 2; machine tools, wall, and roof. Asbestos containing materials are expected to exist in building components such as wall board, transite, Thermal Systems Insulation (TSI) and solid surfacing components Lead shielding was machined and formed in the maintenance area. CFC's such as freon was used for refrigerant in Air conditioners and was stored in the Maintenance area PCB's may exist as a result of historical storage of electrical components	ACM, Pb, CFC's, PCB's
5	Room 141 - This set includes Room 141, concrete pedestals, concrete	Pu, U, Pb, Acid

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Bismuth, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	walls and presents a significant Pu contamination problem Room 141 was an SNM storage vault and then a pump room. Operational problems with the pumping operation on Room 141 resulted in radionuclide bearing acidic solution spills that contaminated the concrete floor and pedestal The contamination occurrences were so great that the operation was eventually phased out. Subsequent remediation actions to remove the contaminated concrete resulted in high airborne concentrations of Pu and the room was eventually sealed Lead shielding existed during the pump operation period It is expected that acid spills may have deposited lead contamination in the concrete structures It is estimated that several grams of SNM hold-up are present in the concrete and room structures	
6	Room 114 Glovebox 1 - This set includes Glovebox 1, Tanks D-705, D-706, D-713, D-714, D-715, D-716, D-764 and D-765, piping and valves Glovebox 1 was used to precipitate Am for solution and is highly contaminated. Am is a contaminant of the Pu process. Glovebox 1 was used to purify the Am stripped from the Pu processes Pu and Am contamination exists as a result of the processing and several grams of SNM hold-up exists in this system Lead shielding such as plate, gloves and leaded glass windows are present Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed lines to the process Oxalic acid was used in the precipitate process Additionally, ammonium thiocyanate was used as a reagent chemical in the process Residual quantities of these chemicals may exist.	Pu, Am, SNM, ACM, Pb, Acid, Base
7	Room 114 Glovebox 2 - This set includes Glovebox 2, piping and the shielded drum storage area on the south wall of Room 114 Glovebox 2	Pu, U SNM, ACM, Pb, Acid, Base

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Borelix, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	was used for Pu metal dissolution and other miscellaneous processing Pu contamination in this system is a result of the purpose of the system itself, several grams of SNM hold-up exist in the dissolution system. The dissolution process included the use of acid Lead shielding such as plate, gloves and leaded glass windows are present. Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed to the process Small quantities of U was processed in this system in the 1960's and should be considered when planning removal actions.	
8	Room 114 Glovebox 3 - This set includes Glovebox 3, vault storage areas and hot tool storage cabinets Glovebox 3 was the dissolution line for Plutonium Oxides Plutonium oxide was dissolved in heated acid and residual contamination including multiple kilograms of SNM holdup exist Lead shielding such as plate, gloves and leaded glass windows are present Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed to the process	Pu, SNM, ACM, Pb, Acid
9	Room 114 Gloveboxes 4, 5A, 9A and 22 - This set includes Gloveboxes 4, 5A, 9A and 22, tanks D-6 and D-967, piping, valves, motors and control panels. Gloveboxes 5A and 9A contain vacuum pumps for lines 16 & 5 Glovebox 4 contains a blower for the pneumatic transfer system Oil is expected to be contained in equipment reservoirs and lubricated components. Gloveboxes 5A and 9A are both H4 Nash vacuum systems. Pu bearing acidic and basic solutions were drawn into the vacuum systems Nash vacuum pumps utilizes a water based seal liquid that was also passed through a heat exchange system Asbestos in the form of thermal systems insulation is expected to be present on the	Pu, SNM, ACM, Pb, Be, Acid, Oil

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Borelix, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons



Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area.
10	<p>heat exchange system Glovebox line 22 was used to burn Pu metal chips to produce oxide. Be metal coatings may have existed with the Pu Several hundred grams of SNM hold-up are known to exist in these gloveboxes. Lead shielding such as plate, gloves and leaded glass windows are present.</p> <p>Room 114 Glovebox 5 - This set includes Glovebox 5, Tanks D-548, D-549, D-550, D-551, D-552, D-609 and D-610. This system was a hot nitric acid spray leaching system used to remove (leach) metals from Pu objects and fixtures U and Be metals were removed from Pu components through acid dissolution. There are 3 spray leach hoods 2 FulFlo filters and a heat exchanger Multiple kilograms of SNM hold-up exists in process lines and equipment Asbestos in the form of thermal systems insulation is expected to be present on the heat exchange system Benelex and lead shielding is present on this glovebox. Oil is expected to exist in equipment reservoirs</p>	<p>Pu, U, SNM, ACM, Blix, Be, Acid, Oil</p>
11	<p>Room 114 Gloveboxes 6, 7, 7A - This set includes Gloveboxes 6, 7 and 7A, Tank D-7; cinderblock shielding walls; electrical control panels, pumps; piping and valves. Glovebox 7A contains the Nash Vacuum pump for Lines 6 and 7 Glovebox contains the Hydrofluorinator and Glovebox 6 has the Flouninator Hydrofluorinator Scrubber. The main feed for this system consisted of Pu bearing solids resulting in contamination of the process system. Multiple kilograms of SNM hold-up exists in these systems. Hg may be present in analytical instruments. Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed to the process. Lead in the form of shielding of the glovebox walls, gloves and windows is present Oils are</p>	<p>Pu, SNM, ACM, Pb, Acid, Oil Base, Hg</p>

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Blix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area.
	expected to be present in equipment reservoirs. KOH (potassium hydroxide a basic solution) was used to scrub the acidic off gasses from the hydrofluorinator	
12	Room 114 Gloveboxes 8, 8E, 9 - This set includes Gloveboxes 8, 8E and 9, piping and valves. These were used for storing calcined Pu oxide Containers were moved by pneumatic transfer from other process lines to these boxes for storage of Pu oxide. Lead in the form of shielding of the glovebox walls, gloves and windows is present. Multiple kilograms of SNM hold-up exist in the transfer lines and filters.	Pu, SNM, Pb
13	Room 114 Gloveboxes 11, (New) 14 - This set includes Gloveboxes 11 and 14 (new), Tanks D-507, D-508, D-509, D-510, Glovebox 11 was used for evaporating Pu nitrate solutions Equipment used in this process includes tanks, pipes, pumps, evaporator and condenser Pu contamination exists as a result of the operation of this process, several hundred grams of SNM hold-up exists Acids may exist in process piping and vessels. Mercury may be present in analytical instruments. Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed to the process. CFC's may be present in process cooling equipment Lead in the form of shielding of the glovebox walls, gloves and windows is present Oils are expected to be present in equipment reservoirs.	Pu, SNM, ACM, Pb, Acid, Oil, CFC, Hg, Cr
14	Room 114 Glovebox 12 - This set includes Glovebox 12, valves, piping, Tanks D-949, D-950, D-951, D-952, D-953, D-954, D-955, D-546, D-547, D-553 and D-554. Also included is shielding wall around the tank farm. Pu nitrate from various sources was stored in these tanks The glovebox was used as a sampling station for those tanks listed above	Pu, Pb, Bix, Acid

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination Report		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	Benelex and lead shielding around the tanks and gloveboxes is present. Pu contamination is present in all of the tanks, piping and the glovebox.	
15	Room 114, Glovebox 13 and (Old) 14 - This set includes Glovebox 13 which is attached to Glovebox Old 14 and Tanks D-500, D-501, D-502, D-503, D-504, D-505, D-506, D-507, D-508, D-509, D-510, D-544 and D-545. Also included is a shielding wall around the tank farm and piping in the overhead  Glovebox 13 is a piping manifold system used for batching solutions for the precipitation process. Lead in the form of shielding of the glovebox walls, gloves and windows is present. Various contaminants of concern associated with other processes in B771 are also expected to be present. Several hundred grams of SNM hold-up is present in this system.  Glovebox 14 (old) contains a steam heated evaporator used to concentrate plutonium solutions for batch processing. Nitric acid Pu bearing solutions were the primary feed for this process, several hundred grams of SNM hold-up exists in process equipment. Lead in the form of shielding of the glovebox walls, gloves and windows is present.  Additional benelex shielding is present on the glovebox and surrounding the associated tank farm. Oils are expected to be present in equipment reservoirs. Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed to the process.	Pu, SNM, U, ACM, Blix, Pb, Acid, Oil, Cr
16	Room 114 Gloveboxes 15 and 16 - This set includes Gloveboxes 15 and 16, electrical control panels, pumps, piping and valves. Glovebox 15 was used for Pu peroxide precipitation and Glovebox 16 was used for calcination of plutonium peroxide to Pu oxide	Pu, SNM, Pb, Acid, Oil, CFC's

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Blix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area.
	<p>Glovebox 15 is a purification step for solutions from high level dissolution. This process uses tanks, pumps, pipes, various filters, vessels and a precipitation digester. Pu contamination in this system is a factor of the purpose of the system itself. Several hundred grams of SNM hold-up exist in line 15 equipment. Acids including nitric and sulfuric were used in this process. Oils are expected to be present in equipment reservoirs. Lead in the form of shielding of the glovebox walls, gloves and windows is present. Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed to the process. CFC's are present in the precipitator digester cooling systems. Glovebox 16 removes excess nitric acid moisture from the Pu peroxide cake formed in the precipitation process. The process uses a screw feeder, rotary tube calciner, scrubber, filter, hot plate, scale and transfer system. Pu contamination in this system is a factor of the purpose of the system itself. Multiple kilograms of SNM hold-up are present in the line 16 systems. Lead in the form of shielding of the glovebox walls, gloves and windows is present. Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed to the process.</p>	
17	<p>Room 114 Glovebox 17 - This set includes Room 112 and 114B, Glovebox 17, two motor generator sets, ovens and control panels. This set contains the glovebox system for Reduction and Button Break Out. This glovebox system was inerted with nitrogen when it was operational. The process was to convert Pu tetrafluoride to Pu metal. Several hundred grams of SNM holdup exist in the glovebox and associated equipment. This process resulted in contamination of the process components.</p>	Pu, SNM, Pb, Oil, Cr

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Bismuth, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	Additional operations included machining of the Pu metal to collect QA samples. Oils may exist as cutting fluids or in equipment reservoirs. Lead in the form of shielding of the glovebox walls, gloves and windows is present	
18	Room 114A Glovebox 18 - This set includes Glovebox 18, Tanks D-70, D-71, D-72 and D-73, motors; pumps; piping and valves. Glovebox 18 contains two H6 high volume Nash Vacuum pumps to produce negative pressure to transfer radionuclide bearing acidic solutions This is commonly known as the "House Vacuum System" Pu and U contamination of the pumps and the glovebox is a result of system operation Oils such as lubricants exist in process equipment Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed to the process Lead in the form of shielding on the glovebox walls, gloves and windows is present.	Pu, U, ACM, Pb, Acid, Oil
19	Elevator Area - This set includes Rooms 142, 145 and 242, electrical control panel, elevator cage and hydraulic unit. The presence of oils is expected in equipment reservoirs and as a lubricant on machine parts	Oil
20	Annex Area - This set includes Rooms 301, 302, 303, 304, 305 and 306 Drum counters and scales, exhaust fans and motors; interior walls and doors Oils in the form of lubricants on equipment and other machinery exist. Fixed radionuclide contamination is present as a result of past operations. Lead shielding is present in the material storage areas	Pu, U, Am, Pb, Oil
21	Room 149 Process Room and C-Cell - This set includes the Contamination Control Cell and Air Handling Unit Radionuclide contamination exists on exposed surfaces of the contamination control cell as a result of past operations	Pu, U, Am

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Borelix, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
22	<p>Room 149 Gloveboxes 33, 37, 38 and 39 - This set includes Gloveboxes 33, 37, 38 and 39 and Tanks D-5, D-176, D-177 This system was used to incinerate Pu contaminated combustibles.</p> <p>Glovebox 33 is a caustic fume scrubber filtration system It is expected to contain residual radionuclide bearing acids and bases remaining from operations. Lead in the form of leaded glass glovebox windows and lead lined glovebox gloves is present. Several grams of SNM hold-up exist Chromates are expected to be present in the cooling water system</p> <p>Glovebox 37 is the incinerator glovebox. Radionuclide contamination is a result of the incineration of contaminated scrap combustibles Multiple kilograms of SNM hold-up is present Mercury is expected to be contained in analytical equipment and instruments Asbestos in the form of firebrick, insulation, gaskets and transite is present. Lead in the form of lead plate shielding, leaded glass windows and lead lined gloves exists</p> <p>Glovebox 38 contains a milling and grinding operation to pulverize radionuclide bearing ash from the incinerator Several hundred grams of SNM hold-up is present Oils in the form of lubricants exist on the grinding and material transfer equipment Asbestos containing fireproofing materials are present Chromates are expected to be present in the cooling water system</p> <p>Glovebox 39 contains a H4 Nash vacuum system to provide negative pressure for the Glovebox 33 scrubber system. This system is contaminated as a result of operation. Chromates are expected to be present in the cooling water system</p>	<p>Pu, U, SNM, ACM, Pb, Hg, Acid, Base, Oils, Cr</p>
23	Room 149 Gloveboxes 23, 24 and 25 - This set includes Gloveboxes 23,	<p>Pu, SNM, ACM, Pb, Acid, Cr,</p>

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Borelix, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	24 and 25; Tank D-928, shielding wall, piping and valves. Gloveboxes 23, 24 and 25 were used as cascade dissolver lines. Glovebox 24 "High Level Dissolution" dissolves high gram value Pu Oxides. Primary feed for this system was impure oxides and fluorides from in house operations Gloveboxes 23 and 25 "Low Level Dissolution" dissolves high impurity/low Pu content residues to recover Pu in two identical process lines. Pu bearing materials processed in these lines has led to Pu contamination through out the gloveboxes and the high potential for SNM hold-up in the process equipment Multiple kilograms of SNM hold-up is contained in these systems. Acids were present in each of these systems as the primary method of dissolution is in acid dissolvers Caustic solutions of Potassium Hydroxide were used to control the acidic solutions Lead in the form of shielding of the glovebox walls, windows and gloves is present Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed to the process. Chromates are expected to be present in both water-wall shielding and cooling water systems. Lubricating oils were also present on the mechanical equipment. Additionally the feed materials sand, slag and crucible wastes have exhibited regulated levels of Chromium metal	Base, Oil
24	Room 149 Glovebox 26 - This set includes Glovebox 26, Tanks D-979, D-980, Scrubbing Towers and D-982, piping, valves, pumps and motors Glovebox 26 contains the Fume Scrubber recalculation pumps for recalculation KOH through the scrubber towers to scrub fumes from dissolution off gas systems and evaporator off gases. Asbestos insulation on steam and cooling water systems is present. Oil lubricants are present on equipment and within reservoirs Acids and bases are contained in	Pu, ACM, Acid, Oil, Base, Cr, CFC's

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Bismuth, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area.
	system piping Chromates are expected to exist in cooling water piping. The cooling water refrigeration system contains CFC's.	
25	Room 149 Glovebox 27 - This set includes Glovebox 27, storage racks and non load bearing walls. This was a former SNM staging area for materials to be counted for Pu value. Lead glass windows and lead lined gloves are present on GB 27 Additionally lead shielded containers are present.	Pu, Pb
26	Room 149 Glovebox 29 - This set includes Glovebox 29 and Tanks D-360, D-361, D-362, D-363 and D-364, piping and valves. Glovebox 29 was a laboratory waste processing glovebox with a chloride ion exchange Glovebox 29 "Cation Exchange" processed radionuclide bearing chloride solutions from various site sources This process involved ion exchange to separate out the Pu content and the resulting Pu bearing nitric acid elute was then compatible with the remainder of the B771 processes Pu contamination in this system is a factor of the purpose of the system itself, several grams of SNM hold-up in the process equipment exists Acids were utilized as a feed material and to strip/clean the ion exchange resins Asbestos is considered to be a contaminant concern for set 26 by association with surrounding thermal systems insulation. Lead in the form of shielding of the glovebox walls, gloves and windows is present Other effluent from this system contains a wide range of other contaminants from the feed materials, including U, AM and Cr.	Pu, U, Am, SNM, ACM, Pb, Cr, Acid,
27	Room 149 Glovebox (old) 30 - This set includes Glovebox 30 (old) and Tanks D-302, D-204, D-205, D-206, D-207, D-208, D-218 and D-219, piping and valves This system was used to dissolve Am salts and separate Pu from Am in acid dissolvers Several hundred grams of SNM	Am, Pu, SNM, ACM, Pb, Acid, Oil, Base

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Borelix, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons



Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	hold-up is present in the old line 30 process KOH (base) was used to neutralize the acids Thermal systems insulation on steam lines feeding the process is expected to contain asbestos Lubricating oils were used on components and is expected to be contained in equipment reservoirs Lead shielding is present inside the glovebox surrounding the process columns.	
28	Room 149 Gloveboxes 31 and 50 - This set includes Gloveboxes 31 and 50; Tanks D-920, D-921, D-922, D-923 and D-927; piping and valves Glovebox 31 is used for tank sampling and glovebox 50 is used for filtration of liquids Glovebox 31 is a sampling glovebox used to collect samples from tanks D921, D922, D923 and D927. Glovebox 50 contains a manifold filtering system to filter out solids from the tanks noted above. Tanks D921 and D922 received caustic (base) waste from the acid fume scrubber system (line 33) Lead in the form of shielding, lead lined gloves and leaded glass windows are present on both gloveboxes Thermal systems insulation on the steam feed to the gloveboxes is expected to contain asbestos	Pu, Pb, Acid, Base, ACM
29	Room 149 Gloveboxes 40 and 44 - This includes Gloveboxes 40 and 44, Tanks D-78 and D-79, piping and valves Glovebox 40 contains two Bingham vacuum pumps for the house vacuum system Glovebox 44 contains a Bingham pump for the house vacuum system Pu contamination has resulted from house vacuum applied to various tanks containing Pu bearing acidic solutions and gloveboxes Caustic (base)	Pu, Pb, Acid, Oil, Base

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Beryllium, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
30	<p>Room 149 Glovebox 42 - This set includes Glovebox 42, Tanks D-451, D-452, D-453, D-454, D-456, D-457, D-466, D-467, D-468, D-469, D-470, D-472, D-971, D-972, D-973, D-974, D-975 and D-976. Also included is piping, valves, shielding walls around tank farm and electrical control panel Glovebox 42 is one of the Anion Exchange Purification Gloveboxes Anion exchange removed elemental impurities from Pu nitrate solutions Pu contamination is present by virtue of the process, additionally uranium, beryllium and cadmium may have existed as an impurity in the feed solutions Several hundred grams of SNM hold-up is present in the process piping and tanks. Acids were utilized to both strip the exchange columns and was a component of the feed material Lead in the form of shielding of the glovebox walls, gloves and windows is present Asbestos in the form of thermal systems insulation is expected to be present on process equipment and steam heat feed to the process Oils are expected to be present in equipment reservoirs. Basic solutions were also used as a function of the process Benelex shielding is also present in this set</p>	<p>Pu, U, SNM, ACM, Bix, Pb, Be, Cd, Acid, Oil Base</p>
31	<p>Room 149 Gloveboxes 43A, B, C and D - This set includes Gloveboxes 43A, 43B, 43C and 43D, piping and valves Glovebox 43A is graphite scarfing, pipe clean-out and filter disassembly Radioactive material contamination is a result of these operations Lead in the form of shielding of the glovebox walls, gloves and windows is</p>	<p>Pu, U, Am, SNM, ACM, Bix, Pb, Be, Acid, Oil</p>

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area.
	<p>present Several hundred grams of SMN hold-up is present in this system</p> <p>Glovebox 43B is used for grinding of sand, slag and crucible waste</p> <p>Radioactive material contamination is a result of these operations Lead in the form of shielding of the glovebox walls, gloves and windows is present. Several hundred grams of SMN hold-up is present in this system</p> <p>Oils in the form of lubricants is expected to exist in the equipment reservoirs.</p> <p>Glovebox 43C included a ball mill for pulverizing the sand, slag and crucible waste. Radioactive material contamination is a result of these operations Lead in the form of shielding of the glovebox walls, gloves and windows is present. Several hundred grams of SMN hold-up is present in this system. Oils in the form of lubricants is expected to exist in the equipment reservoirs</p> <p>Glovebox 43D is a Anion Exchange Purification Glovebox. Radionuclide and Be bearing acidic solutions were processed through this system. Multiple kilograms of SNM hold-up are present Lead shielding is present on the glovebox walls, gloves and windows. Asbestos in the form of thermal systems insulation is expected to be present on steam heating components.</p>	
32	<p>Room 149 Glovebox (new line 30) - This set includes Glovebox 30 (New) Tanks D-1925, D1926, D-1927, D-1928, D-1930, D-1931, D-1932, D-1934, D-1935, D-1936, D-1937, D-1939, D-1940, D-1941, D-1942, D-1943, D-1944 and D-1945 This new glovebox system, tanks, electrical control panel, valves and piping were never put into service There are also two large water wall shielding walls that are cold. This is a 35 ft x 40 ft area that the equipment removal would free up work space for other</p>	Pb, Oil, Cr

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Berlex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	projects in Room 149 The system was never tied into the process system Lead shielding is present on the exterior of the glovebox and the 18 tanks. Oil lubricants are expected in the pumps Two water walls are known to contain liquid and are expected to contain chromates.	
33	Room 149 Tank Farm - This set includes Tanks D-931, D-932, D-933, D-934 and the shielding walls around the tanks, piping and valves. This tank farm was used for storage of Pu nitrate solutions. The tank farm is surrounded by a Benelex, Plexiglas and lead shielded walls SNM hold-up is expected in these tanks, however it has not yet been measured.	Pu, Bix, Pb, Acid, SNM
34	Room 148 Process Area - This set includes Room 148, Tanks D1-976, D-1977, D-1978, D-1979, D-1984, D-1987, D-1990, D-1991, D-1992 and D-1993 This area has lead shielded annular tanks that were never put into service and should be cold (non-contaminated). Radioactive material contamination is known to exist under the stainless steel floor cover Asbestos is expected to be present in the form of thermal systems insulation on pipes in the area.	Pu, ACM, Pb
35	147 Office Area - This set includes Rooms 140B, C, D & E, 147, 147A, B, C, D & E, training glovebox and the internal walls and doors These rooms were used as offices, Pu can scanners and storage. This was originally designated as the process control room. Residual/fixed radiological contamination from past operations exists. Asbestos is expected to be present in the floor tiles and pipe insulation. Various chemical containers are stored in these areas and are expected to contain oils and many commercial chemicals.	Pu, U ACM, Oil, RCRA
36	Room 146 Process Area - This set includes Rooms 146, 146A and 146C, Gloveboxes MT1, MT2, MT3, MT4, MT5, MT6, MT7, MT8, SR11 and	Am, Pu, U SNM, MFP, ACM, Bix, Pb, Hg, Be, Acid, RCRA,

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	<p>SR12, Tanks D-1001, D-1002, D-1003, D-1004, D-1005, D-1006, D-1007, D-1008, D-1009, D-1010, D-1011, D-1012, D-1013, D-1014, D-1019, D-1020 D-1022, D-1023, D-1024, D-1032, D-1033, D-1050, D-1051, D-1053, D-1054, D-1055, D-1062, D-1063, D-1064, D-1065, D-1066, D-1067 and D-1069 These gloveboxes, tanks, pipes and vaults were used for a process called Special Recovery. Special Recovery was a set of processes to recover Pu from materials containing other contaminants. This area also contained a fluidbed fluorination system and a vault type storage room. The special recovery operations consisted of Pu stripping from unique radionuclide bearing solutions. The variety of process feed included waste lab samples, solvents and specially made up chemical formulations. Asbestos containing insulation is present on steam heat feeds and surrounding various equipment. Benelex shielding is present around the tank farms, lead shielding is present on the gloveboxes. CFC's and Chromates are expected to be present in the cooling systems. Several hundred grams of SNM hold-up is present in the gloveboxes and transfer piping Lubricating oils are present on components and equipment reservoirs.</p> <p>Room 146A contains gloveboxes SR11 and SR12 that are pilot plant designed fluidbed hydrofluorination process. This project supported the onsite prove in of additional processing facilities. The fluidbed hydrofluorinator has no organic lubricants The SR11 glovebox is shielded with both Benelex and lead, a water wall surrounds the glovebox Multiple kilograms of SNM hold-up is present in SR11, SR12, and associated equipment</p> <p>Room 146C is a former vault area used to store low level residues The</p>	Oil, CFC, Cr, Base

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	vault is surrounded by both Benelex and lead shielding Minor residual radionuclide contamination is expected.	
37	<p>Room 181A Process Area - The west end of the room contains 55 gal drums of High Level Mixed Waste This material will need to be moved before an NDA assessment can be performed to get an accurate value of the SNM hold-up</p> <p>This set includes Room 181A, Glovebox SR14, Tanks D-1400, D-1401, D-1402, D-1406, D-1407, D-1409, D-1410, D-1411, D-1414 and D-1415, an electrical panel, a scrubber refrigeration unit and associated valves and piping SR14 is a solvent extraction process for U bearing acidic solutions. Acids and bases were used in the stripper/scrubber and residual amounts are expected to be present CFC's and chromatates are present in the chiller/refrigeration unit Oils and lubricants are expected to be present on components and equipment reservoirs Lead plate shielding, leaded glass windows and lead lined gloves are present on the glovebox</p>	Pu, U, SNM, Pb, Acid, Oil, CFC, Cr, Base
38	<p>Room 182 Process Area - This set includes Room 182, Gloveboxes 201, 202, 203, 204, 205, 206, 207, 208 209, 213, 214, 215, 221, 223, 224, 225, 227, 228, 229, 241, 242 and an overhead conveyor system</p> <p>The room contains a number of gloveboxes that are new and were never placed into service These boxes would be removed first so as not to contaminate them Removal of the rest of the equipment would follow</p>	Pu, U, SNM, PCB, ACM, Bix, Pb, Hg, Be, Acid, Oil
39	<p>Room 182A Process Area - This set includes Gloveboxes 261, 262, 263, 264, 269, 270, 662 and a hydraulic press and piping.</p> <p>Gloveboxes 261, 264, 269, 270 and 662 are used for Pu metal storage and sampling</p>	Pu, U, Pb, Oil

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	<p>Glovebox 262 and 263 are used for storage of Pu metals and oxides</p> <p>Each of these gloveboxes have lead shielding, windows and gloves.</p> <p>RCRA regulated solvents were used to strip oils and grease from metal samples U metal samples were periodically processed.</p>	
40	<p>Room 183 Storage Area - This set includes Room 183, 184 and 185.</p> <p>Room 183 is full of High Level Residue drums. Room 184 is a residue storage vault for SNM Room 185 is a small storage room Residual fixed radiological contamination from past glovebox operations exists Insulated piping in the overhead areas is expected to contain asbestos.</p>	Pu, U, ACM
41	<p>Room 186 Process Area - This set includes Room 186, 186A, 186B, 187 and 188, Gloveboxes 862, 863 864, 865, 866 187A, 187B, 187C, 187D, 187E and Hood 187F This was an R&amp;D area (186/187) and an SNM storage vault (188) The office area (186A) has desks and cabinets and Room 187 has a set of cabinets that are cold, the rest of the equipment, gloveboxes and B-Boxes are Tru-Waste Room 186 is a R&amp;D metallurgical lab. The equipment used for sample testing includes a large hydraulic press and misc hand tools to prepare samples of Pu metal. A refrigeration unit in the room has CFC's, lead plate shielding, lead gloves and leaded windows. Present storage of other wastes make accurate SNM hold-up counting problematic.</p> <p>Room 186 A is an office A refrigerator in the office contains CFC's</p> <p>Room 186B is a storage closet Drywall partitions exist and are suspected of containing asbestos</p> <p>Room 187 is an R&amp;D analytical lab for dissolution of metals Lead lined gloveboxes, leaded windows and lead lined gloves are used Insulation of steam lines is suspected of containing asbestos Various chemical such</p>	Pu, U, SNM, ACM, Pb, Hg, Oil

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	as acids, bases and solvents were used in this lab Mercury in analytical instruments is likely to be present Room 188 is a storage vault with lead shielding and water wall containers The water-walls are suspect of containing chromates. The room has been washed down and RCRA closed.	
42	180 Office Area - This set includes Room 180G, 180H, 180I, 180J and 180L. This is an office area and a corridor (L). This area contains cabinets and office furniture Insulation and solid surfacing materials are present and expected to contain asbestos Various RCRA listed chemicals were formerly stored in these rooms	ACM, RCRA
43	Room 180A thru F and K Process Area - This set includes Rooms 180A, 180B, 180C, 180D, 180E, 180F and 180K; Gloveboxes A10, A20, A30, A31, A32, A51, A52, A53, D1, D2, D3, E10, E11, E20, E30, E31, E32, E50, E51, F20, F30, F60 F70, K10, K20 and K30; Tanks D-1803, D-1804, D-1805, D-1809, D-1810, D-1811, D-1813, D-1816, D-1817, D-1818, D-1819, D-126A, D-126B, D-2, T-5, T-6, T-7, T-8, T-22, T-25, T-26, D-1830, D-1831, D-728, D-729, D-730, D-80, D-81, D-82, D-83, D-84, D-85 and K-30 There are some cold gloveboxes and tanks in R180D all remaining waste is expected to be Tru-Waste. Room 180A is a process simulation lab used for R&D work to define process parameters Radionuclides, acids, bases, solvents and other chemical formulations are present Lead plate shielding, gloves and windows are present. A water wall shield is expected to contain chromates. Lubricating oils are used on pumps and other equipment A refrigeration unit exists and is expected to contain CFC's Room 180B is a vault that has been cleaned out and RCRA closed Water	Pu, U, SNM, MFP, ACM, Bix, Pb, Acid, RCRA, Oil, CFC, Base

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Bi phenyls, ACM = Asbestos Containing Materials, Bix = Borelix, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons



Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	<p>wall shielding is known to contain lead and is expected to contain chromates</p> <p>Room 180C is an extension of 180A and shares much of the same contaminants</p> <p>Room 180D includes two clean gloveboxes and one glovebox used for hydroxide precipitation and neutralization of lab wastes This included radionuclide bearing acids and bases.</p> <p>Room 180E is a furnace casting and metal storage for R&amp;D operations Multiple kilograms of SNM hold-up is present in the 180E gloveboxes and process lines</p> <p>Room 180F is a R&amp;D analytical lab for radionuclide bearing acidic and basic samples.</p> <p>Room 180K is a R&amp;D processing and storage facility for aqueous radioactive solutions.</p> <p>Asbestos insulation, lead plate, lead lined glovebox gloves and leaded glass windows exist in each of the 180 area rooms. The 180 area is the origin of the 1957 fire, resulting in wide spread radioactive contamination Many areas were painted to fix contamination, that is still present.</p>	
44	<p>Room 179 Maintenance Area - This set includes Rooms 178, 179, 179A and Glovebox 179A This area contains lathes, mills, saws and other maintenance equipment that may become low level waste Asbestos insulation and solid surfacing materials are present. Lead and other metals were machined and formed on the shop tools. Lubricating oils, cutting oils and solvents were used and stored here Additionally Freon was commonly used as a degreasing cleaner The glovebox in room 179A was primarily used for maintenance of contaminated equipment</p>	ACM, Pb, Pu, RCRA, Oils, CFC's

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Blx = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
45	<p>Room 174 Process Area - This set includes Rooms 172, 174, 175 and 176, Gloveboxes A1, A2, A3, A4 and A1097, Tanks D-1081, D1082, D01083, D-1084, D-1085, D-1086, D-1087, D-1088, D-1089, D-1095, D-091(N) and D-091(S) There are six storage cabinets and a refrigeration unit that are either cold or at the very least low level waste The refrigeration unit is expected to contain CFC's and lubricating oils</p> <p>Gloveboxes A1 and A4 are an nitric acid spray leach process to strip Pu contamination off of U components SNM hold-up for these boxes is expected to be several grams. Lead in the form of plate shielding, leaded glass windows and lead lined gloves are on the gloveboxes</p> <p>Gloveboxes A2 and A3 are evaporators for concentrating the spray leach chemicals from A1 and A4. Lead in the form of plate shielding, leaded glass windows and lead lined gloves are on the gloveboxes. Mercury is expected to be contained in analytical instruments. Insulation on the steam heat feed lines are likely to contain asbestos.</p> <p>A caustic scrubber is connected to the gloveboxes to neutralize the acidic fumes.</p> <p>Glovebox A1097 contains a H4 Nash vacuum pump that provided the primary negative pressure to transfer solutions to the storage tanks A heat exchanger cools the pump and is expected to contain chromatates</p>	<p>Pu, U, SNM, ACM, Pb, Cr, Hg, Acid, Oil, CFC, Base</p>
46	<p>164 Lab Area - This set includes Room 154, 155, 155A, 156, 156A, 161, 162, 163 and 164, Gloveboxes 49, 50, 13, 12, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 72, 73, 74, 79A, 79B, 80A, 80B, 81A, 81B, 82A, 82B, 83A, 83B, 98, 99, 100, 101, 102, 103, Flame Hood 77, Flame Hood 94 and Chemical Hood, Propane System, piping and valves</p>	<p>Am, Pu, U SNM, MFP, ACM, Bix, Pb, Hg, Be, Acid, RCRA, Oil, Base, CFC's</p>

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Beryllium, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix

Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	Laboratories typically receive samples from all other areas of the facility. Therefore many types of materials and contaminants are present. Many of the gloveboxes contain mercury filled instruments, asbestos insulation, lubricants, solvents, lead shielding, acids and caustics. Additional equipment including refrigeration units, calciner furnaces, propane gas burners and general laboratory fixtures are present.	
47	151 Radiation Control Area - This set consists of Rooms 135A, 135B, 151, 151A, 151B, 151C, 151E, 151F and 152. This includes the RCT areas, selective alpha air monitor (SAAM) alarm panel, Radcon support lab, doffing area and decontamination showers. Room 152 has many lead bricks. The partition walls are expected to contain asbestos fibers.	ACM, Pb
48	153 Process Area - This set includes Gloveboxes 153A, 153B, 153C, 153D, 153E, HC1, HC2, HC3, HC4, HC5 and HC6 and tanks T-3, T-4, T-86, T-87, T-88. Also included is piping, remote manipulators and water-walls. The 153 area is a R&D area that includes hot cells and various test equipment. Gamma and neutron emitting lab samples were analyzed and or processed in this area. Various types of shielding, including Benelex, Lead and Plexiglas are present. Asbestos insulation is present on steam lines. Mercury filled instruments are present. Various other chemicals were used, including acids, bases, oils and solvents.	Am, Pu, U, SNM, MFP, ACM, Bix, Pb, Hg, Acid, Oil, Base
49	157 Stock Room Area - This set includes Room 157. This area was an R&D support area until it was converted to a stock room/storage area in 1992. Asbestos in the form of solid surfacing materials and pipe insulation are expected. Residual contamination from past operations may exist, in inaccessible areas.	ACM
50	158 Lab Area - This set includes Rooms 158, 159, 160, 165, 166A,	Am, Pu, U, ACM, Cr, Pb, Acid,

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	<p>166B, 168 and 169, Gloveboxes 158 North, 158 South, BX1, BX2, BX3, BX4, BX5, BX6, BX7, BX8, BX9, Hood 2, 663A, 663B, 663C and 664</p> <p>This set contains gloveboxes and B-Boxes used for laboratory analysis of Pu, Am and U This area also contains the calorimeters and the Standards Laboratory where standards for counting equipment were fabricated</p> <p>Residual radioactive contamination from laboratory radionuclide bearing chemical samples is present. Rooms 158 and 159 are the radiochemistry labs Room 160 is the calorimeter lab and the equipment cooling system is expected to contain chromatates and CFC's Room 165 is the smear counting room that has cooling systems and may contain residual radioactive contamination Room 166A is the electronics maintenance shop, solvents have been used and stored here. Lead solder was also commonly used in the instrument shop Room 166B was used as a R&amp;D metal casting laboratory and is expected to contain ACM insulation, oil and grease lubricants and radioactive contamination Room 168 is a janitors closet and storage area Room 169 is the standards fabrication and calorimeter analysis lab The calorimeter includes a cooling system where chromatates and CFC's may be present. Many lead brick are also stored here</p>	Oil, CFC, Base
51	<p>149 Utilities Support Area - This set includes Room 149A, 149B, 149C, 149D and 149E, plumbing fixtures, condensate tanks pumps and piping</p> <p>Room 149A contains the steam condensate collection tanks for the utilities condensate system. Water is collected then pumped to cooling towers These tanks are insulated and asbestos is expected</p> <p>Room 149B and 149C are currently used as a storage rooms Vinyl asbestos floor tile and asbestos containing mastic are expected</p>	ACM, Oils

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Borelix, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	Room 149D is the new condensate collection system which was never put into service Rooms 149A and 149D have pumps that contain lubricating oils. Room 149E is a maintenance storage closet A sump is also located here	
52	190 Deluge Process Area - This set includes Room 190, Tank V-2, piping, exterior walls and roof Tank V-2 collects fire suppression water from the zone 1 plenums These liquids are known to be contaminated with the particulate from glovebox exhaust.	Pu, U
53	Main Plenum Area - This set includes Room 280, 281A, 281B, 281, 281A, 281B, 2, 282A, 282B, 282C and 282D, filter elements, cinderblock walls and doors Tanks 309E/309W collect liquid from sumps, sinks and decon showers in B771 The primary filter bank contains 525 filters The secondary filter bank contains 391 filters All airborne radioactive particulate from the of the processes and process rooms maybe deposited into the filter media.	Am, Pu, U, MFP, Be
54	283 HVAC Exhaust and Utilities Area - This set includes Rooms 283, 283A, 283B, 283C, 283D, 283E, 283F, 283G, 283H, 283I and 283J, the six main exhaust fans and motors, office walls, Uninterruptable power supply system, main electrical switch gear and control room panels PCB's have been removed from the existing electrical components, however residual contamination may remain as a result of past spills. Asbestos in the form of thermal systems insulation, solid surfacing materials and electrical components. Mercury filled instruments were used and residual contamination of the concrete may exist. Lead exists in electrical components Oils for cooling electrical components and as lubricants for other machinery are present	PCB, ACM, Pb, Hg, Oil

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Beryllium, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
55	235 HVAC Supply and Utilities Area - This set includes Rooms 232, 233, 234, 235, 236, 237, 238, 238A, 239, 240, 240A, 240B, 240C, 240D, 240E and 240G, supply fans motors, plenums and walls This is the building air intake system consisting of filters, heaters, blowers and dampeners Asbestos pipe insulation on steam lines for the heating units Oil and grease lubricants on equipment	ACM, Oil
56	249 HVAC Exhaust and Utilities Area - This set includes Rooms 229, 230, 231, 241, 245, 246, 246A, 247, 248 and 249; Zone 1 Filter Plenums, fans, motors and ductwork, Chem Make Up tanks; piping and valves. These are the reagent chemical supply tanks for building operations The filter plenums are contaminated and have the potential to contain any thing that was exhausted from the gloveboxes Room 247 is the wet chemical make-up system Acids, Bases and other process chemical feeds were formulated. Multiple kilograms of SNM hold-up is present in the plenum Cooling water systems in this set are suspected of containing regulated levels of chromium Asbestos pipe insulation is likely to be present on steam heat lines.	Am, Pu, U, MFP, ACM, Acid, RCRA, Oil, Base, Cr
57	309 Tank Area - This set includes room 309, Tanks D309E and D309W, two outside walls, piping and valves The tanks collect liquids from the building sumps, sinks and decontamination showers for sampling prior to release to waste processing Lubricating oils and greases are present on pumps and equipment.	Oil
58	Corridors A, D, E, G, H, Stairwell 1,2,3, 127 Utility Room and Tunnel Area - This set includes Corridors A, D, E, G and H; stairwells 1, 2 and 3, Room 127, Tunnel (only to south outer wall of Bldg 771), security	Pu, U, ACM, Acid, Base

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Beryllium, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	electronics equipment, lockers, doors and piping. Residual contamination from the 1969 fire and the Building 776 water main break is expected Radionuclide bearing acidic and basic chemicals have been transferred in pipe lines above the drop ceilings Asbestos in the form of steam line insulation, solid surfacing materials and floor tile exist.	
59	Indirect/Direct Evaporative Cooling Area - This set includes the 8 new intake air systems, piping, valves, electrical distribution and control panels and the metal building This comprises new ventilation equipment that has never been put into service No contamination from building operations is expected Unused commercial chemical products may exist in this area and should be reviewed for hazardous constituents	N/A
60	771 HVAC - This set includes Zone 1 and Zone 2 HVAC ducts and the concrete stack Zone 1 ducts contain radioactive contamination and SNM hold-up of multiple kilograms of material Zone 2 ducts are known to contain residual contamination as a result of spills and internal releases Asbestos containing insulating materials are expected on some sections of duct work Oils and grease lubricants are present on ventilating equipment.	Pu, U, Am, ACM, Oil
61	774 Room 202 Process Area 201, 202A - This set includes Rooms 201, 202 and 202A,, Gloveboxes 5, 6, 7, 8 and a pump, Tanks 1A, 1RF, 2F, 3, 4L, 4R, 5, 7O, 71, 73 and a new tank. This area is know as the "First Stage" processing for solutions from B771. This area contains three gloveboxes, nine tanks, a microwave chiller and a motor control center The piping transfer tunnel from B771 enters at the southwest corner of the room. Remaining radionuclide bearing solutions including acids and bases are	Am, Pu, U, ACM, Pb, Acid, Oil, Base, CFC's

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Bi-phenyl's, ACM = Asbestos Containing Materials, Bix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area.
	processed for disposal. Lead in the form of plate shielding, leaded gloves and leaded glovebox windows are present Oils and greases used as lubricants are expected to be present on equipment and in reservoirs Asbestos in the form of steam line insulation is expected to be present CFC's are expected to be present in the chiller system.	
62	774 Room 241 Process Area - This set includes Room 24, Tanks T-201, T-202, T-203, T-294, T-205m T-206 T-207, T-208 and T210B 4 tanks are reagent tanks and 4 are batching tanks for precipitation Radionuclide contamination is present in these tanks, additionally acidic and basic solutions were stored and prepared Oils and greases used as lubricants are expected on equipment and in reservoirs.	Am, Pu, U, Acid, Oil, Base
63	774 Room 250 Storage Area, 251 - This set includes Room 250 and 251 This area was to be a replacement for the precipitation process equipment Since this did not become operational, the rooms became a storage area	N/A Supply Areas No Hazardous Concerns
64	774 Room 212 Storage Area - This set includes Room 212 This area is used to store Powders for the OASIS process (oil/grease processing)	N/A Supply Areas No Hazardous Concerns
65	774 Room 103 Process Area, 105 - This set includes Rooms 103 and 105; Gloveboxes 13 and 355, Tanks T-40, D-351 and KOH Receiver This area is in the basement and is a support area to the second stage precipitation process Radionuclide bearing acidic and basic solutions were processed and stored here Asbestos in the form of insulation materials is expected Oils and greases used as lubricants are expected to be contained in equipment and in reservoirs Lead in the form of leaded glass windows and lead lined gloves is present.	Am, Pu, U, ACM, Pb, Acid, Oil, Base
66	774 Room 102 Process Area, 101, 104 - This set includes Rooms 101,	Am, Pu, U, ACM, Pb, Acid, Oil,

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Bénélex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons



Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	102 and 104; Gloveboxes 9, 10, 11 and 12, Tanks T-5, T-9, T-10, T-11L, T-11R, T-12, T-74, T-210A and C-1 This area is in the basement and is a support area for first stage precipitation /neutralization process There is one storage area and stairwell entry from the second floor into Rooms 102 and 103. Radionuclide bearing acidic and basic solutions were processed and stored here. Asbestos in the form of insulation materials is expected Oils and greases used as lubricants are expected to be contained in equipment and in reservoirs Lead in the form of lead plate shielding, leaded glass windows and lead lined gloves is present.	Base
67	774 Room 210 Process Area - This set includes Room 210 and 201A, Gloveboxes 1, 2, 4, 15, 206, Microwave and OASIS, Tanks 1, 2, 7, 8, 13, 14, 374A and caustic waste receiver This area is located on the second floor above ground level. Operations performed are microwave vitrification, cementation for organics, neutralization and cementation of waste solutions at the bottle box Radionuclide bearing oils, acids and caustic/basic solutions were processed and stored here Asbestos in the form of insulation materials are expected Oils and greases used as lubricants are expected to be contained in equipment and in reservoirs. Lead in the form of lead plate shielding, leaded glass windows and lead lined gloves is present CFC's are present in the chiller system.	Am, Pu, U, ACM, Pb, Acid, Oil, Base, CFC's
68	774 Room 200 Dock Area - This set includes Room 209 and 220, Tanks T-102 and T-103 This area is located on the second floor ground level and is the shipping and receiving area of drums and crates for B774 There are two large waste oil storage tanks in Room 220. Approximately 10,000 gallons of radionuclide bearing waste machining oils are presently stored These oils are known to contain PCB's, Transite siding is present	Pu, U, PCB's, ACM, (Oil, RCRA) - See #72

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Blx = Borelix, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	on the outer walls	
69	774 Room 203 Process Area - This set includes Room 203, Glovebox 17, Tanks T-40(Old) and T-42. This area is on the second floor above ground level and was the second stage precipitation area. It is currently used as a step off pad when the rooms are posted as a Contamination Area (CA) Radionuclide bearing acids and bases were used in the precipitation process Glovebox 17 has lead shielding and each of the gloveboxes are expected to have lead lined gloves and leaded glass windows Oils and greases used as lubricants are expected to be on components and in equipment reservoirs Asbestos in the form of thermal systems insulation is expected to be present	Pu, U, Am, ACM, Pb, Acid, Oil, Base
70	774 Room 341 Utilities Area - This set includes Rooms 341, 342, 343, 344 and exhaust plenum This area is on the third level and contains a ventilation filter plenum Radioactive contamination as a result of B774 glovebox exhaust The room 241 tanks extend through the floor to room 342 These tanks are included in the room 241 description	Pu, U, (Acid, Base) - reagent tanks from 241
71	774 Room 441 Utilities Area - This set includes Room 441 and 442 This area is on the fourth level of the facility and contains a ventilation filter plenum and an UPS This is the room air exhaust and recirculation plenum Radioactive contamination as a result of spills and leaks is present. Oils and greases used as lubricants on components and in equipment reservoirs is present Lead and acid exist in the UPS batteries	Pu, U, Oil, Acid, Pb
72	774 Room 320 Utilities Area - This set includes Room s321, 321, 322 This area is located on the third level and is the utilities support to the 200 dock area. There are two filter plenums, an office and electrical switchgear. The filter plenums are radioactively contaminated as a result	Pu, U, PCB, (RCRA, Oil) - tanks from #68 (Also may contain silver Ag)

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Bismuth, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	of past operations PCB's may be present in the electrical switchgear and are know to be contained in the waste oil tanks Asbestos in pipe insulation is expected to be present Residual silver contamination may exist from a defunct silver reclamation process.	
73	774 Rooms 200-300 Office Area - This set includes Rooms 204, 205, 207, 208, 301, 302, 303, 304, 305 and 306 This area includes the control room, offices, conference room, break room and rest rooms Asbestos is expected as pipe insulation and structural materials.	ACM
74	774 HVAC - This set includes Zone 1 and Zone 2 HVAC Ducts Radioactive contamination in the ducts is a result of operations and the ventilation of contaminated systems	Pu, U
75	771/774 Cluster Facilities, 771 and 774 Structures and Cap - This set includes demolition of Buildings 771 and 774 This is the demolition of the remaining structure Residual contamination in the building structure is expected Additionally, transite siding will be included in this set	Am, Pu, U, PCB, ACM, Pb, RCRA, MFP, Residual contamination from many sources
76	Utilities All - This set includes security, fire, steam, plant air, instrument air, breathing air, domestic water, process water, gas, sanitary waste, process waste and electrical systems	Residual contamination from various sources
77	771/774 Out Buildings - This set includes Buildings 714, 714A, 714B, 715, 716, 717, 772, 772A, 774A, 774B and 775 Included in these buildings and tanks are areas that contain chemical contamination and one building that contains diesel fuel A number of the buildings contain asbestos siding (Transite). Two of the tanks are situated in a wetlands area and one building is the environmental sampling station for B771's exhaust air flow Residual acids in building 714, bases in the bulk KOH storage tank, fuel oils in 715 & 716 Tanks 774-1 and 774-2 condensate	ACM, PCB, RCRA, Acid, Base

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

Table 1 Building 771 Reconnaissance Level Characterization Report Contamination/Hazard Matrix		
Set Number	Set Description	Radioactive and/or Hazardous Substances known to have been used, processed, or stored in this area
	collection tanks are situated in an area where ground contamination is known to contain PCB's Building 770 contains piping systems with asbestos containing insulation The 728 pit tanks collect overflow from the plenums and contains radioactive contamination 775 Sanitary lift station is continuously monitored and all waste is sent to the site treatment plant prior to discharge 773 Guard post built in 1953 may contain asbestos thermal systems insulation and floor tile	
78	Room 181A Size Reduction Area - This set includes Room 181A and size reduction equipment to be installed for closure work	TBD
79	Room 114 and 114 A Process Rooms - This set includes Rooms 114 and 114A	TBD
80	Room 183 Package Counter - This set includes Rooms 183, 184 185 and the package counter to be installed to support building closure	TBD
81	771A Cluster Out-buildings - This set includes buildings 770, T771A, 771A, T771B, T771C, 771C, T771D, T771E, T771F, T771G, T771H, T771J, T771K, T771L The trailer complex there are two trailers which are shower facilities, one trailer is used for restrooms and one trailer that is condemned The rest of the trailers are used for offices	TBD

Am = Americium, Pu = Plutonium, U = Uranium, SNM = Special Nuclear Material, MFP = Mixed Fission Products, PCB = Polychlorinated Biphenyls, ACM = Asbestos Containing Materials, Bix = Benelex, Cr = Chromium, Cd = Cadmium, Pb = Lead, Hg = Mercury, Be = Beryllium, Acid = Characteristic Acid, Base Characteristic Basic/Caustic, RCRA = RCRA Classified Solvents, Oil = Oil, CFC = Chloro-fluoro-carbons

**Table 2 - Definition of the range/levels of concern for various hazards present in B771**

<b>Hazard</b>	<b>Physical Form</b>	<b>Rank</b>	<b>Basis</b>
Radionuclides (Pu, Am, U, Sr, Co, Cs)	Oxides and powders	High	Tractability
	In solutions	Med	
	Clad or containerized	Low	
Special Nuclear Material (Pu239, Pu241, U235)	Greater than 1 Kilogram	High	Tractability
	Hundreds of Grams	Med	
	Less than 100 Grams	Low	
Poly-chlorinated Bi-phenyls	Oils in electrical components >1 0 oz	High	Volume and Tractability
	Oils in electrical components <1 0 oz	Med	
	Immobile in solid or surface coatings	Low	
Asbestos	Thermal Systems Insulation	High	Tractability
	Solid Surfacing	Med	
	Non-Friable Transite and floor tile	Low	
Lead	Dust, Chips, Oxides	High	Tractability
	Plate Brcks, and elemental Lead	Med	
	Leaded Glass and Gloves	Low	
Acids	Liquids and Reactive Crystalline Salts	High	Reactivity and Physical contact
	Dry solids	Low	
Bases/Caustics	Liquid	High	Physical contact
	Solid	Low	
RCRA Solvents	Unused Commercial Chemical Products	High	Tractability and Volume
	Liquids contained in systems	Low	
Oils	PCB Oils	High	Physical Properties
	Hydraulic oils and Liquids	Med	
	Grease, Lubricants	Low	
CFC's	Refrigerants in fixed Equipment	Med	Potential for Release
	Refrigerants in portable Equipment	Med	
Chromium	Oxides and powders	High	Tractability
	In Solution	Med	
	Metals and alloys	Low	

Cadmium	Oxides and powders	High	Tractability
	In Solution	Med	
	Metals and alloys	Low	
Mercury	Uncontained elemental mercury	High	Volume and Tractability
	Contained in instruments	Med	
	Contained in Fluorescent Light Tubes	Low	
Beryllium	Uncontained Oxides	High	Tractability
	Metals and alloys	Low	

Tractable, 1 capable of being easily led, taught or controlled 2 easily handled, managed or wrought

**Table 3**  
**CHEMICALS/CHARACTERISTICS/METALS**  
**REGULATORY LIMITS, ANALYSIS METHODS and USEPA**  
**IDENTITIES**

Parameter	Method	Technique	MDL	Regulatory Limit	EPA No
Corrosivity (pH)	EPA 9045 1311 Extract	Electrometric	NA	less than or equal 2.0 pH or greater to or equal 12.5 pH	D002
Reactivity, Cyanide Sulfide	EPA 7 3/9012 EPA 7 3/9030 1311 Extract	Colorimetric Titration	2 ug/l 1 mg/l	Reactive Cy 250 mg/L React Sulf 500 mg/L	D003
TCLP Volatile Organic	EPA 8260 1311 Extract	GC/MS	NOTE 1	Benzene 5 mg/L Carbon Tetrachloride 1 mg/L Chlorobenzene 100 mg/L Chloroform 6 mg/L 1,2-Dichloroethane 0.5 mg/L 1,1-Dichloroethylene 0.7 mg/L Methyl ethyl ketone 200 mg/L Tetrachloroethylene 0.7 mg/L Trichloroethylene 0.5 mg/L Vinyl chloride 0.2 mg/L	D018 D019 D021 D022 D028 D029 D035 D039 D040 D043
TCLP Semivolatile Organic	EPA 8270 1311 Extract	GC/MS	NOTE 1	o-cresol 200 mg/L m-cresol 200 mg/L p-cresol 200 mg/L Cresol 200 mg/L 1,4-Dichlorobenzene 7.5 mg/L 2,4-Dinitrotoluene 0.13 mg/L Hexachlorobenzene 0.13 mg/L Hexachlorobutadiene 0.5 mg/L Hexachloroethane 3.0 mg/L Nitrobenzene 2.0 mg/L Pentachlorophenol 100 mg/L Pyridine 5 mg/L 2,4,5-Trichlorophenol 400 mg/L 2,4,6-Trichlorophenol 2.0 mg/L	D023 D024 D025 D026 D027 D030 D032 D033 D034 D036 D037 D038 D041 D042
TCLP Metals (Ag Ba Cd Cr Pb)	EPA 6010  1311 Extract	ICP Emission  Spectroscopy	7 ug/L  2 ug/L 2 ug/L 5 ug/L 30 ug/L	Silver 5 mg/L  Barium 100 mg/L Cadmium 1 mg/L Chromium 5 mg/L Lead 5 mg/L	D011  D005 D006 D007 D008
TCLP Metals (As)	EPA 7060 1311 Extract	Furnace AA	3 ug/l	5.0 mg/L	D004
TCLP Metals (Se)	EPA 7740 1311 Extract	Furnace AA	5 ug/l	1.0 mg/L	D010
TCLP Metals (Hg)	EPA 7470 1311 Extract	Cold Vapor AA	2 ug/l	2 mg/L	D009
PCBs (TCL)	EPA 8080	GC/ECD	NOTE 1	50 ppm	NA
PCBs (TCL) - wipe test	EPA 8080	GC/ECD	NOTE 1	NA	NA
Paint Filter Test (PFT)	EPA 9095	Paint Filter	NA		NA

NOTE 1 Multi components with varying MDL's

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
1	Corridor B Office Area	Rooms 116 117, 117A, 118 118A, 119 119A, 119B, 119C 19D, 124, 125, 125A, 125B, 125C 125D 125E 126 126A 126B	ACM	Solid Surfacing	Medium	N/A
2	Corridor F Office Area	Rooms 103, 104 105, 105A 105B, 107, 109, 110 110A, 110B, Corridor F	ACM CFC's	Solid Surfacing Refrigerant	Medium Medium	N/A N/A
3	Locker Room Area	Rooms 120, 122, 123, 123A, 123B, 123C, 127 133, 135	ACM	TSI	High	N/A
4	Maintenance Area	Rooms 129 129A 129B, 129C 129D 129F, 130, 131, 132, 132A, and Dock2	Pb Oil RCRA CFC's	Plate Lubricants Commercial chemicals Refrigerant	Low Low High Medium	Oxides PCB s N/A N/A
5	141 Infinity Room	Room 141	Pu U SNM Pb Acid	Oxides Oxides Several Grams Oxides Residue	High High High High Low	N/A N/A N/A N/A Liquids
6	114 Glovebox 1		Pu Am SNM ACM Pb Acid Base	Oxides Oxides Several Grams TSI Plate Residue Residue	High High Low High Medium Low Low	N/A N/A N/A N/A Oxides Liquids Liquids
		Tank D-705	Pu Am SNM Pb Base	Oxides Oxides Several Grams Plate Residue	High High Low Medium Low	N/A N/A N/A Oxides Liquids
		Tank D-706	Pu Am U SNM Pb Base	Oxides Oxides Oxides Hundreds of grams Plate Residue	High High High Medium Medium Low	N/A N/A N/A N/A Oxides Liquids
		Tank D-713				



# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-714	Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			SNM	Several Grams	Medium	N/A
			Pb	Plate	Medium	Oxides
			Base	Residue	Low	Liquids
		Tank D-715	Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
		Tank D-716	Add	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			Add	Residue	Low	Liquids
			Pu	Oxides	High	N/A
		Tank D-764	Am	Oxides	High	N/A
			Add	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
		Tank D 765	Add	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
			Add	Residue	Low	Liquids
7 Room 114		Glovebox 2	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			ACM	TSI	High	N/A
			Pb	Plate	Medium	Oxides
		Glovebox 3	Add	Residue	Low	Liquids
			Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
8 Room 114		Glovebox 4	ACM	TSI	High	N/A
			Pb	Plate	Medium	Oxides
			ACM	TSI	High	N/A
			Add	Residue	Low	Liquids
			Base	Residue	Low	Liquids
9 Room 114		Glovebox 5A	Pu	Oxides	High	N/A
			Oil	Lubricants	Low	PCB s
			Pu	Oxides	High	N/A
			Oil	Lubricants	Low	PCB s
			Pu	Oxides	High	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Glovebox 9A	Pb	Gloves	Low	N/A
			ACM	TSI	High	N/A
			Acid	Residue	Low	Liquids
		Glovebox 22	Pu	Oxides	High	N/A
			Pb	Gloves	Low	N/A
			ACM	TSI	High	N/A
		Tank D-6	Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Be	Oxides	High	N/A
		Tank D-987	Pb	Plate	Medium	Oxides
			Pu	Oxides	High	N/A
			Pu	Oxides	High	N/A
10	Room 114	Glovebox 5	SNM	Several Grams	Low	N/A
			Acid	Residue	Low	Liquids
		Tank D-548	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Multiple Kilograms	High	N/A
		Tank D-549	ACM	TSI	High	N/A
			Be	Oxides	High	N/A
			Oil	Lubricants	Low	PCB s
		Tank D-550	Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			U	Oxides	High	N/A
		Tank D-550	SNM	Hundreds of Grams	Medium	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
		Tank D-550	Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
		Tank D-550	SNM	Hundreds of Grams	Medium	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
		Tank D-550	Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
		Tank D-550	SNM	Several Grams	Low	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-551	Cr Add	Oxides Residue	High Low	N/A Liquids
			Pu Pb Add	Oxides Plate Residue	High Medium Low	N/A Oxides Liquids
		Tank D-552	Pu SNM Pb Add	Oxides Several Grams Plate Residue	High Low Medium Low	N/A N/A Oxides Liquids
			Pu SNM Pb Add	Oxides Several Grams Plate Residue	High Low Medium Low	N/A N/A Oxides Liquids
		Tank D 609	Pu SNM Add	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
			Pu SNM Add	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-610	Pu SNM Add	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
			Pu SNM Add	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Glovebox 6	Pu SNM Pb Cr Add Base	Oxides Multiple Kilograms Plate In Solution Residue Residue	High High Medium Low Low Low	N/A N/A Oxides Liquids Liquids
			Pu SNM ACM Pb Cr Hg Oil Add	Oxides Multiple Kilograms TSI Gloves In Solution Contained in Instruments Hydraulic Residue	High High High Low Low Medium Low	N/A N/A N/A N/A Oxides N/A N/A Liquids
		Glovebox 7A	Pu SNM ACM Pb Cr Hg Oil Add	Oxides Multiple Kilograms TSI Gloves In Solution Contained in Instruments Hydraulic Residue	High High High Low Low Medium Low	N/A N/A N/A N/A Oxides N/A N/A Liquids
			Pu SNM ACM Pb Add	Oxides Multiple Kilograms TSI Residue	High Low High Low	N/A N/A N/A Liquids
		Tank D-7	Pu SNM ACM Pb Add	Oxides Multiple Kilograms TSI Residue	High Low High Low	N/A N/A N/A Liquids
			Pu SNM ACM Pb Add	Oxides Multiple Kilograms TSI Residue	High Low High Low	N/A N/A N/A Liquids
		Glovebox 8	Pu SNM Pb Add	Oxides Multiple Kilograms Plate	High High Medium	N/A N/A Oxides
			Pu SNM Pb Add	Oxides Multiple Kilograms Plate	High High Medium	N/A N/A Oxides
		Glovebox 7	Pu SNM ACM Pb Cr Hg Oil Add	Oxides Multiple Kilograms TSI Gloves In Solution Contained in Instruments Hydraulic Residue	High High High Low Low Medium Low	N/A N/A N/A N/A Oxides N/A N/A Liquids
			Pu SNM ACM Pb Add	Oxides Multiple Kilograms TSI Residue	High Low High Low	N/A N/A N/A Liquids
		Glovebox 7A	Pu SNM ACM Pb Add	Oxides Multiple Kilograms TSI Residue	High Low High Low	N/A N/A N/A Liquids
			Pu SNM ACM Pb Add	Oxides Multiple Kilograms TSI Residue	High Low High Low	N/A N/A N/A Liquids

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
13	Room 114	Glovebox 8E	Pu Am U	Oxides Oxides Oxides	High High High	N/A N/A N/A
			Pu SNM Pb	Oxides Multiple Kilograms Plate	High High Medium	N/A N/A Oxides
			Pu SNM ACM Pb Cr Hg Oil Acid	Oxides Hundreds of Grams TSI Gloves In Solution Contained In Instruments Lubricants Residue	High Medium High Low Low Low Low Low	N/A N/A N/A N/A Oxides N/A PCB s Liquids
		Glovebox 14 New	Pb Cr	Plate In Solution	Low Low	Oxides Oxides
		Tank D-507	Acid	Residue	Low	Liquids
		Tank D-508	Acid	Residue	Low	Liquids
		Tank D-509	Acid	Residue	Low	Liquids
		Tank D-510	Acid	Residue	Low	Liquids
		Tank D-529	Acid	Residue	Low	Liquids
		Tank D 530	Pu Acid	Oxides Residue	High Low	N/A Liquids
14	Room 114	Glovebox 12	Pu Acid	Oxides Residue	High Low	N/A Liquids
			Pu Pb Acid	Oxides Gloves Residue	High Low Low	N/A N/A Liquids
			Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-949	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-950	Pu U SNM	Oxides Oxides Several Grams	High High Low	N/A N/A N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-951	Acid	Residue	Low	Liquids
		Tank D-952	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-953	Pu U SNM Acid	Oxides Oxides Several Grams Residue	High High Low Low	N/A N/A N/A Liquids
		Tank D-954	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-955	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-546	Pu Pb SNM Acid	Oxides Plate Several Grams Residue	High Medium Low Low	N/A Oxides N/A Liquids
		Tank D-547	Pu U SNM Pb Acid	Oxides Oxides Hundreds of grams Plate Residue	High High Medium Medium Low	N/A N/A N/A Oxides Liquids
		Tank D-553	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-554	Pu Acid	Oxides Residue	High Low	N/A Liquids
15	Room 114	Glovebox 13	Pu Am U SNM ACM Pb	Oxides Oxides Oxides Hundreds of grams TSI Plate	High High High Medium High Medium	N/A N/A N/A N/A N/A Oxides

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
			Oil	Lubricants	Low	PCBs
		Glovebox 14 (old)	Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			SNM	Hundreds of grams	Medium	N/A
			ACM	TSI	High	N/A
			Cr	In Solution	Low	Oxides
			Acid	Residue	Low	Liquids
		Tank D-500	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Tank D-501	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Tank D-502	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Tank D-503	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Tank D-504	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Tank D-505	Pu	Oxides	High	N/A
			U	Oxides	High	N/A



# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
			SNM Pb Cr Oil Acid	Multiple Kilograms Plate In Solution Lubricants Residue	High Medium Low Low Low	N/A Oxides Oxides PCB's Liquids
17	Room 114	Glovebox 17	Pu SNM Pb Cr Oil	Oxides Hundreds of grams Gloves In Solution Lubricants	High Medium Low Low Low	N/A N/A N/A Oxides PCB's
18	Room 114A	Glovebox 18	Pu U ACM Pb Oil Acid Base	Oxides Oxides TSI Gloves Lubricants Residue Residue	High High High Low Low Low Low	N/A N/A N/A N/A PCB's Liquids Liquids
		Tank D-70	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-71	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D 72	Pu U SNM Acid	Oxides Oxides Multiple Kilograms Residue	High High High Low	N/A N/A N/A Liquids
		Tank D 73	Pu SNM Acid	Oxides Hundreds of Grams Residue	High Medium Low	N/A N/A Liquids
19	Elevator Area	Room 142	Oil	Hydraulic Oil	Medium	N/A
		Room 145 Janitors Closet	N/A			
		Room 242	Oil	Lubricants	Low	PCB's
20	Annex Area	Rooms 301 302 303 304 305 306	Pu Am U Pb	Oxides Oxides Oxides Plate	High High High Medium	N/A N/A N/A Oxides



# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
21	Room 149	C-Cell	Oil	Lubricants	Low	PCBs
22	Room 149	Glovebox 33	Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			U	Oxides	High	N/A
			Pu	Oxides	High	N/A
		Glovebox 37	U	Oxides	High	N/A
			SNM	Several Grams	High	N/A
			Pb	Gloves	Low	N/A
			Acid	Residue	Low	N/A
		Glovebox 38	Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Multiple Kilograms	High	N/A
		Glovebox 39	ACM	TSI	High	N/A
			Pb	Plate	Medium	Oxides
			Cr	In Solution	Low	Oxides
			Hg	Contained in Instruments	Low	N/A
		Tank D-176	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Hundreds of Grams	Medium	N/A
			Pb	Plate	Medium	Oxides
		Tank D-177	Oil	Lubricants	Low	PCBs
			Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Gloves	Low	N/A
		Tank T 5601	N/A			
			Pu	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Base	Residue	Low	Liquids
		Tank 630	Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
		Tank 631	SNM	Several Grams	Low	N/A
			Base	Residue	Low	Liquids

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
23	Room 149	Glovebox 23	Pu	Oxides	High	N/A
			SNM	Multiple Kilograms	High	N/A
		Glovebox 24	ACM	TSI	High	N/A
			Pb	Gloves	Low	N/A
			Cr	In Solution	Low	Oxides
			Oil	Lubricants	Low	PCB s
			Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
		Glovebox 25	Pu	Oxides	High	N/A
			SNM	Multiple Kilograms	High	N/A
			ACM	TSI	High	N/A
			Pb	Gloves	Low	N/A
			Cr	In Solution	Low	Oxides
			Oil	Lubricants	Low	PCB s
24	Room 149	Tank D-928	Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
		Glovebox 26	Pu	Oxides	High	N/A
			SNM	Multiple Kilograms	High	N/A
			ACM	TSI	High	N/A
			Pb	Gloves	Low	N/A
			Cr	In Solution	Low	Oxides
			Oil	Lubricants	Low	PCB s
		Tank D-980	Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
		Tank D 981	CFC's	Refrigerant	Medium	N/A
			Pu	Oxides	High	N/A
24	Room 149	Tank D-980	SNM	Several Grams	Low	N/A
			Acid	Residue	Low	Liquids
		Tank D 981	Pu	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Acid	Residue	Low	Liquids
		Tank D 981	Pu	Oxides	High	N/A
			SNM	Several Grams	Low	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
25	Room 149	Glovebox 27	Base	Residue	Low	Liquids
26	Room 149	Glovebox 29	Pu Am U SNM ACM Pb Cr Acid	Oxides Gloves  Oxides Oxides Oxides Several Grams TSI Plate Oxides Residue	High Low  g g g Low g Medium High Low	N/A N/A N/A N/A N/A N/A Oxides N/A Liquids
		Tank D 360	Pu Am U SNM Acid Base	Oxides Oxides Oxides Hundreds of Grams Residue Residue	High High High Medium Low Low	N/A N/A N/A N/A Liquids Liquids
		Tank D-361	Pu Am U SNM Acid Base	Oxides Oxides Oxides Hundreds of Grams Residue Residue	High High High Medium Low Low	N/A N/A N/A N/A Liquids Liquids
		Tank D-362	Pu Am U SNM Acid Base	Oxides Oxides Oxides Hundreds of Grams Residue Residue	High High High Medium Low Low	N/A N/A N/A N/A Liquids Liquids
		Tank D-363	Pu Am U SNM Acid	Oxides Oxides Oxides Several Grams Residue	High High High Low Low	N/A N/A N/A N/A Liquids
		Tank D-364	Pu Am U Acid	Oxides Oxides Oxides Residue	High High High Low	N/A N/A N/A Liquids
27	Room 149	Glovebox (old) 30	Pu Am U SNM Acid Base	Oxides Oxides Oxides Several Grams Residue Residue	High High High Low Low Low	N/A N/A N/A N/A Liquids Liquids

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-203	Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			SNM	Hundreds of Grams	Medium	N/A
			ACM	TSI	High	N/A
			Pb	Plate	Medium	Oxides
			Oil	Lubricants	Low	PCB's
			Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
		Tank D-204	Pu	Oxides	High	N/A
			Base	Residue	Low	Liquids
		Tank D-205	Pu	Oxides	High	N/A
			Base	Residue	Low	Liquids
		Tank D-206	Pu	Oxides	High	N/A
			Base	Residue	Low	Liquids
		Tank D-207	Pu	Oxides	High	N/A
			Base	Residue	Low	Liquids
		Tank D-208	Pu	Oxides	High	N/A
			Base	Residue	Low	Liquids
		Tank D-218	Pu	Oxides	High	N/A
			Base	Residue	Low	Liquids
		Tank D-219	Am	Oxides	High	N/A
			Acid	Residue	Low	Liquids
28	Room 149	Glovebox 31	Pu	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Glovebox 50	Pu	Oxides	High	N/A
			ACM	TSI	High	N/A
			Pb	Gloves	Low	N/A
			Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
		Tank D-920	Pu	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
			Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			SNM	Hundreds of Grams	Medium	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D921	Acid	Residue	Low	Liquids
		Tank D 922	Pu SNM Base	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-923	Pu U SNM Base	Oxides Oxides Hundreds of Grams Residue	High High Medium Low	N/A N/A N/A Liquids
		Tank D-927	Pu SNM Cr	Oxides Several Grams Oxides	High Low High	N/A N/A N/A
		Glovebox 40	Pu U Pb	Oxides Oxides Gloves	High High Low	N/A N/A N/A
		Glovebox 44	Pu U SNM ACM Pb Oil Acid Base	Oxides Oxides Hundreds of Grams TSI Gloves Lubricants Residue Residue	High High Medium High Low Low Low	N/A N/A N/A N/A N/A PCB s Liquids Liquids
		Tank D 78	Pu SNM	Oxides Several Grams	High Low	N/A N/A
		Tank D-79	Pu U SNM	Oxides Oxides Several Grams	High High Low	N/A N/A N/A
		Glovebox 42	Pu U SNM ACM Be Pb Oil	Oxides Oxides Hundreds of Grams TSI Oxides Gloves Lubricants	High High Medium High High Low	N/A N/A N/A N/A N/A N/A PCB s

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-451	Acid Base	Residue Residue	Low Low	Liquids Liquids
		Tank D-452	Pu SNM Acid	Oxides Hundreds of Grams Residue	High Medium Low	N/A N/A Liquids
		Tank D-453	Pu SNM Acid	Oxides Hundreds of Grams Residue	High Medium Low	N/A N/A Liquids
		Tank D-454	Pu SNM Acid	Oxides Hundreds of Grams Residue	High Medium Low	N/A N/A Liquids
		Tank D 456	Acid	Residue	Low	Liquids
		Tank D-457	Acid	Residue	Low	Liquids
		Tank D-466	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-467	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-468	Pu U SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-469	Pu U SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-470	Pu U SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-472	Pu	Oxides	High	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-971	SNM Acid	Several Grams Residue	Low	N/A
					Low	Liquids
		Tank D-972	Pu SNM Acid	Oxides Several Grams Residue	High	N/A
					Low	N/A
					Low	Liquids
		Tank D-973	Pu SNM Acid	Oxides Hundreds of Grams Residue	High	N/A
					Medium	N/A
					Low	Liquids
		Tank D-974	Pu SNM Pb Acid	Oxides Several Grams Plate Residue	High	N/A
					Low	N/A
31	Room 149	Tank D-975	Pu SNM Pb Acid	Oxides Several Grams Plate Residue	High	N/A
					Low	N/A
		Tank D-976	Pu SNM Acid	Oxides Several Grams Residue	High	N/A
					Low	N/A
					Low	Liquids
		Glovebox 43A	Pu Am U SNM Pb	Oxides Oxides Oxides Hundreds of Grams Gloves	High	N/A
					High	N/A
					High	N/A
					Medium	N/A
					Low	N/A
		Glovebox 43B	Pu Am U SNM Pb Oil	Oxides Oxides Oxides Hundreds of Grams Gloves Lubricants	High	N/A
					High	N/A
					High	N/A
					Medium	N/A
					Low	N/A
					Low	PCB's
		Glovebox 43C	Pu Am U SNM Pb Oil	Oxides Oxides Oxides Hundreds of Grams Gloves Lubricants	High	N/A
					High	N/A
					High	N/A
					Medium	N/A
					Low	N/A
					Low	PCB's

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Glovebox 43D	Pu Am U SNM ACM Acid Base	Oxides Oxides Oxides Multiple Kilograms TSI Residue Residue	High High High High High Low Low	N/A N/A N/A N/A N/A Liquids Liquids
	32 Room 149	Glovebox (new line 30)	Pb Oil	Plate Lubncants	Medium Low	Oxides PCB s
		Tank D-1925	Pb	Plate	Medium	Oxides
		Tank D-1926	Pb	Plate	Medium	Oxides
		Tank D-1927	Pb	Plate	Medium	Oxides
		Tank D-1928	Pb	Plate	Medium	Oxides
		Tank D-1930	Pb	Plate	Medium	Oxides
		Tank D-1931	Pb	Plate	Medium	Oxides
		Tank D-1932	Pb	Plate	Medium	Oxides
		Tank D-1934	Pb	Plate	Medium	Oxides
		Tank D-1935	Pb	Plate	Medium	Oxides
		Tank D-1936	Pb	Plate	Medium	Oxides
		Tank D-1937	Pb	Plate	Medium	Oxides
		Tank D-1939	Pb	Plate	Medium	Oxides
		Tank D-1940	Pb	Plate	Medium	Oxides
		Tank D-1941	Pb	Plate	Medium	Oxides
		Tank D-1942	Pb	Plate	Medium	Oxides
		Tank D-1943	Pb	Plate	Medium	Oxides
		Tank D-1944	Pb	Plate	Medium	Oxides
		Tank D-1945	Pb	Plate	Medium	Oxides



# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Waterwalls	Pb	Plate	Medium	Oxides
			Cr	In Solution	Low	Oxides
33	Room 149	Tank D-931	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-932	Pu SNM Acid	Oxides Hundreds of Grams Residue	High Medium Low	N/A N/A Liquids
		Tank D-933	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-934	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-976	Pb	Plate	Medium	Oxides
34	Room 148	Tank D-1977	Pb	Plate	Medium	Oxides
		Tank D-1978	Pb	Plate	Medium	Oxides
		Tank D-1979	Pb	Plate	Medium	Oxides
		Tank D-1984	Pb	Plate	Medium	Oxides
		Tank D-1987	Pb	Plate	Medium	Oxides
		Tank D-1990	Pb	Plate	Medium	Oxides
		Tank D-1991	Pb	Plate	Medium	Oxides
		Tank D-1992	Pb	Plate	Medium	Oxides
		Tank D-1993	Pb	Plate	Medium	Oxides
		Rooms 140B 104C, 140D 140E 147 147A, 147B 147C 147D, 147E	Pu U ACM Pb Oil	Oxides Oxides TSI Plate Lubricants	High High High Medium Low	N/A N/A N/A Oxides PCB's
36	Room 146 Process Area	Glovebox MT 1				

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
			Pu U Pb Acid	Oxides Oxides Plate Residue	High High Medium Low	N/A N/A Oxides Liquids
		Glovebox MT2	Pu U Be Pb Cr Acid	Oxides Oxides Oxides Plate Oxides Residue	High High High Medium High Low	N/A N/A N/A Oxides N/A Liquids
		Glovebox MT3	U ACM Pb Acid	Oxides TSI Plate Residue	High High Medium Low	N/A N/A Oxides Liquids
		Glovebox MT4	Pu Am U Pb Cr Acid	Oxides Oxides Oxides Plate Oxides Residue	High High High Medium High Low	N/A N/A N/A Oxides N/A Liquids
		Glovebox MT5	Pu U	Oxides Oxides	High High	N/A N/A
		Glovebox MT6	Pu U Oil	Oxides Oxides Lubricants	High High Low	N/A N/A PCB's
		Glovebox MT7	Pu U Pb RCRA Acid	Oxides Oxides Plate Liquid Residue	High High Medium Low Low	N/A N/A Oxides N/A Liquids
		Glovebox MT8 New, not placed into service	N/A			
		Glovebox SR11	Pu SNM MFP ACM Pb	Oxides Several Grams Oxides TSI Plate	High Low High High Medium	N/A N/A N/A N/A Oxides
		Glovebox SR12	Pu	Oxides	High	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D 1001	SNM	Several Grams	Low	N/A
			MFP	Oxides	High	N/A
			ACM	TSI	High	N/A
			Pb	Plate	Medium	Oxides
		Tank D-1002	Pu	Oxides	High	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
		Tank D-1003	Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
		Tank D-1004	Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Tank D-1005	Pu	Oxides	High	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
		Tank D 1006	Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
		Tank D-1007	Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			SNM	Several Grams	High	N/A
			Pb	Oxides	Low	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-1008	Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
		Tank D-1009	Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
		Tank D-1010	Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Tank D-1011	Pu	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Tank D-1012	Pu	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Tank D-1013	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Pb	Oxides	High	N/A
			Cd	Oxides	High	N/A
			Cr	Oxides	High	N/A
		Tank D-1014	Acid	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Acid	Residue	Low	Liquids

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
			SNM Pb Cd Cr Acid	Several Grams Oxides Oxides Oxides Residue	Low High High High Low	N/A N/A N/A N/A Liquids
		Tank D-1019	Pu U Pb Acid	Oxides Oxides Plate Residue	High High m Low	N/A N/A Oxides Liquids
		Tank D-1020	Pu U Pb Acid	Oxides Oxides Plate Residue	High High m Low	N/A N/A Oxides Liquids
		Tank D-1022	Pu U SNM Pb Cd Cr Acid	Oxides Oxides Several Grams Oxides Oxides Oxides Residue	High High Low High High High Low	N/A N/A N/A N/A N/A N/A Liquids
		Tank D-1023	Pu U Pb Cd Cr Acid	Oxides Oxides Oxides Oxides Oxides Residue	High High High High High Low	N/A N/A N/A N/A N/A Liquids
		Tank D-1024	Pu SNM Pb Cd Cr Acid	Oxides Several Grams Oxides Oxides Oxides Residue	High Low High High High Low	N/A N/A N/A N/A N/A Liquids
		Tank D-1032	Pu Pb Acid	Oxides Plate Residue	High m Low	N/A Oxides Liquids
		Tank D 1033	Cr	Oxides	High	N/A
		Tank D 1050	Pu SNM	Oxides Several Grams	High Low	N/A N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-1051	Base Pu U Acid	Residue Oxides Oxides Residue	Low High High Low	Liquids N/A N/A Liquids
		Tank D-1052	Pu U Acid	Oxides Oxides Residue	High High Low	N/A N/A Liquids
		Tank D-1053	Pu U Acid	Oxides Oxides Residue	High High Low	N/A N/A Liquids
		Tank D-1054	Pu SNM Base	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-1055	Pu U Acid	Oxides Oxides Residue	High High Low	N/A N/A Liquids
		Tank D-1056	Pu U Acid	Oxides Oxides Residue	High High Low	N/A N/A Liquids
		Tank D-1057	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1058	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1059	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1061	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1062	Pu U SNM Acid	Oxides Oxides Several Grams Residue	High High Low Low	N/A N/A N/A Liquids
		Tank D-1063	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1064	Pu Acid	Oxides Residue	High Low	N/A Liquids

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-1065	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Acid	Residue	Low	Liquids
		Tank D-1066	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Acid	Residue	Low	Liquids
		Tank D-1067	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Acid	Residue	Low	Liquids
37	Room 181A	Tank D-1068	Pu	Oxides	High	N/A
			U	Several Grams	Low	N/A
			SNM	Residue	Low	Liquids
			Acid			
		Tank D-1069	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Acid	Residue	Low	Liquids
		Glovebox SR 14	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			RCRA	Liquids	Low	N/A
			Acid	Liquids	Low	N/A
		Cautic Scrubber	Pu	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
		Tank D-1401	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Tank D-1402	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Acid	Residue	Low	Liquids

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-1406	Pu U Acid	Oxides Oxides Residue	High High Low	N/A N/A Liquids
		Tank D-1407	Pu U Acid	Oxides Oxides Residue	High High Low	N/A N/A Liquids
		Tank D-1409	Pu U Acid	Oxides Oxides Residue	High High Low	N/A N/A Liquids
		Tan D-1410	Pu U Acid	Oxides Oxides Residue	High High Low	N/A N/A Liquids
		Tank D-1411	U Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1414	Pu RCRA Acid	Oxides Liquids Residue	High Low Low	N/A N/A Liquids
		Tank D-1415	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Glovebox 201	Pu Pb	Oxides Gloves	High Low	N/A N/A
		Glovebox 202	N/A never placed into service Pb	Plate	Medium	Oxides
		Glovebox 203	N/A never placed into service Pb	Plate	Medium	Oxides
		Glovebox 204	N/A never placed into service Pb	Plate	Medium	Oxides
		Gloveboxes 205 through 209	Pu SNM Pb	Oxides Hundreds of Grams Plate	High Medium Medium	N/A N/A Oxides
		Glovebox 213				
38	Room 182 Process Area					



# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
			Pu ACM Pb	Oxides TSI Plate	High High Medium	N/A N/A Oxides
		Glovebox 214				
			Pu Acid Base	Oxides Residue Residue	High Low Low	N/A Liquids Liquids
		Glovebox 215				
			Pu SNM ACM Pb	Oxides Hundreds of Grams TSI Plate	High Medium High Medium	N/A N/A N/A Oxides
		Glovebox 221				
			Pu ACM Pb	Oxides TSI Plate	High High Medium	N/A N/A Oxides
		Glovebox 223				
			Pu SNM Pb	Oxides Multiple Kilograms Plate	High High Medium	N/A N/A Oxides
		Glovebox 224				
			N/A never placed into service			
		Glovebox 225				
			N/A never placed into service Pb	Plate	Medium	Oxides
		Glovebox 227				
			Pu ACM Pb	Oxides TSI Plate	High High Medium	N/A N/A Oxides
		Glovebox 228				
			Pu ACM Pb	Oxides TSI Plate	High High Medium	N/A N/A Oxides
		Glovebox 229				
			N/A never placed into service Pb	Plate	Medium	Oxides
		Glovebox 241				
			Pu SNM ACM Pb	Pu Hundreds of Grams TSI Plate	High Medium High Medium	N/A N/A N/A Oxides
		Glovebox 242				
			Pu	Oxides	High	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-430	Pb	Plate	Medium	Oxides
			Pu	Oxides	High	N/A
			Cr	Residue	Low	Liquids
		Tank D-431	Pu	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
			Cr	Residue	Low	Liquids
39	Room 182A Process Area	Glovebox 261	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
		Glovebox 262	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
		Glovebox 263	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
		Glovebox 264	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
		Glovebox 269	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
		Glovebox 270	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
		Glovebox 662	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
40	Room 183 Storage Area	Rooms 183, 184 185	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			ACM	TSI	High	N/A
41	Room 186 Process Area	Glovebox 862	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
				Oxides	High	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
			SNM ACM Pb	Several Grams TSI Plate	Low High Medium	N/A N/A Oxides
		Glovebox 863	Pu U SNM ACM Pb	Oxides Oxides Several Grams TSI Plate	High High Low High Medium	N/A N/A N/A N/A Oxides
		Glovebox 864	Pu U SNM ACM Pb	Oxides Oxides Several Grams TSI Plate	High High Low High Medium	N/A N/A N/A N/A Oxides
		Glovebox 865	Pu U SNM ACM Pb	Oxides Oxides Several Grams TSI Plate	High High Low High Medium	N/A N/A N/A N/A Oxides
		Glovebox 866	Pu U SNM ACM Pb	Oxides Oxides Several Grams TSI Plate	High High Low High Medium	N/A N/A N/A N/A Oxides
		Glovebox 187A	Pu U SNM ACM Pb	Oxides Oxides Several Grams TSI Plate	High High Low High Medium	N/A N/A N/A N/A Oxides
		Glovebox 187B	Pu U SNM ACM Pb Acid	Oxides Oxides Several Grams TSI Plate Residue	High High Low High Medium Low	N/A N/A N/A N/A Oxides Liquids
		Glovebox 187C	Pu U SNM ACM Pb Acid	Oxides Oxides Several Grams TSI Plate Residue	High High Low High Medium Low	N/A N/A N/A N/A Oxides Liquids
			Pu U SNM ACM	Oxides Oxides Several Grams TSI	High High Low High High	N/A N/A N/A N/A N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Glovebox 187D	Pb Acid  Pu U SNM ACM Pb Acid	Plate Residue  Oxides Oxides Several Grams TSI Plate Residue	Medium Low  High High Low High Medium Low	Oxides Liquids  N/A N/A N/A N/A Oxides Liquids
		Glovebox 187E	Pu U SNM ACM Pb Acid	Oxides Oxides Several Grams TSI Plate Residue	High High Low High Medium Low	N/A N/A N/A N/A Oxides Liquids
42	Room 180 Office Area	Rooms 180G 180H 180I, 180J 180L	ACM	TSI	High	N/A
43	Room 180A Process Area	Glovebox A10	Pu Am U Pb Cr Oil RCRA Acid Base	Oxides Oxides Oxides Plate In Solution Lubricants Liquids Residue Residue	High High High Medium Low Low Low Low Low	N/A N/A N/A Oxides Oxides PCB's N/A Liquids Liquids
		Glovebox A20	Pu Am U Pb Cr Oil RCRA Acid Base	Oxides Oxides Oxides Plate In Solution Lubricants Liquids Residue Residue	High High High Medium Low Low Low Low Low	N/A N/A N/A Oxides Oxides PCB's N/A Liquids Liquids
		Glovebox A30	Pu Pb Cr Acid Base	Oxides Plate In Solution Residue Residue	High Medium Low Low Low	N/A Oxides Oxides Liquids Liquids

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Glovebox A31	Pu	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
		Glovebox A32	Cr	In Solution	Low	Oxides
			Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Plate	Medium	Oxides
			Cr	In Solution	Low	Oxides
			Oil	Lubricants	Low	PCB s
			RCRA	Liquids	Low	N/A
			Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
		Glovebox A51	Pu	Oxides	High	N/A
		Glovebox A52	Pb	Gloves	Low	N/A
			Acid	Residue	Low	Liquids
		Glovebox A53	Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Pb	Gloves	Low	N/A
			Acid	Residue	Low	Liquids
		Glovebox D1	Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Pb	Gloves	Low	N/A
			Acid	Residue	Low	Liquids
		Glovebox D2	Base	Residue	Low	Liquids
			N/A never in service			
		Glovebox D3	Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			U	Oxides	High	N/A
			Acid	Residue	Low	Liquids
		Gloveboxes E10 and E11	Base	Residue	Low	Liquids
			N/A never in service			
			Pu	Oxides	High	N/A
			Pb	Plate	Medium	Oxides

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Glovebox E20	Acid Base  Pu SNM ACM Pb	Residue Residue  Oxides Multiple Kilograms TSI Plate	Low Low  High High High Medium	Liquids Liquids  N/A N/A N/A Oxides
		Glovebox E30	Pu SNM ACM Pb	Oxides Multiple Kilograms TSI Plate	High High High Medium	N/A N/A N/A Oxides
		Glovebox E31	Pu Pb	Oxides Plate	High Medium	N/A Oxides
		Glovebox E32	Pu Pb	Oxides Plate	High Medium	N/A Oxides
		Glovebox E50 and E51	Pu SNM ACM Pb	Oxides Hundreds of Grams TSI Plate	High Medium High Medium	N/A N/A N/A Oxides
		Gloveboxes F20 F30 F60 and F70	Pu Acid Base	Oxides Residue Residue	High Low Low	N/A Liquids Liquids
		Gloveboxes K10 K20 and K30	Pu Pb Acid	Oxides Plate Residue	High Medium Low	N/A Oxides Liquids
		Tank D-1803	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D 1804	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-1805	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1809	Pu SNM Acid	Oxides Hundreds of Grams Residue	High Medium Low	N/A N/A Liquids
		Tank D 1810				

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-1811	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1813	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1816	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1817	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1818	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank D-1819	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank T5	Pb	Plate	Medium	Oxides
		Tank T6	Pb	Plate	Medium	Oxides
		Tank T7	Pb	Plate	Medium	Oxides
		Tank T8	Pb	Plate	Medium	Oxides
		Tank T 21	Pb	Plate	Medium	Oxides
		Tank T 22	Pb	Plate	Medium	Oxides
		Tank T-25	Pb	Plate	Medium	Oxides
		Tank T 26	Pb	Plate	Medium	Oxides
		Tank D-126A	Acid	Residue	Low	Liquids
		Tank D-126B	Acid	Residue	Low	Liquids
		Tank D-728	N/A never in service			
		Tank D-729	N/A never in service			

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-730	N/A never in service			
		Tank D-80	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-81	Pu U SNM Acid	Oxides Oxides Several Grams Residue	High High Low Low	N/A N/A N/A Liquids
		Tank D-82	Pu U SNM Acid	Oxides Oxides Several Grams Residue	High High Low Low	N/A N/A N/A Liquids
		Tank D-83	Pu U SNM Acid	Oxides Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-84	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank D-85	Pu SNM Acid	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank K30	Pu Base	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
44	Room 179 Maintenance Area	Room 179A Glovebox	Pu Oil	Oxides Lubricants	High Low	N/A PCBs
45	Room 174 Process Area	Gloveboxes 53A1 53A2 53A3 53A4	Pu U SNM ACM Pb Acid	Oxides Oxides Several Grams TSI Plate Residue	High High Low High Medium Low	N/A N/A N/A N/A Oxides Liquids
		Glovebox A1097				



# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank D-1081	Pu U ACM Oil Acid	Oxides Oxides TSI Lubricants Residue	High High High Low Low	N/A N/A N/A PCB s Liquids
		Tank D-1082	Pu U SNM Acid Base	Oxides Oxides Hundreds of Grams Residue Residue	High High Medium Low Low	N/A N/A N/A Liquids Liquids
		Tank D-1083	Pu U SNM Acid	Oxides Oxides Several Grams Residue	High High Low Low	N/A N/A N/A Liquids
		Tank D 1084	Pu U Acid	Oxides Oxides Residue	High High Low	N/A N/A Liquids
		Tank D 1085	Pu U Acid	Oxides Oxides Residue	High High Low	N/A N/A Liquids
		Tank D 1086	Pu U	Oxides Oxides	High High	N/A N/A
		Tank D 1087	Pu U	Oxides Oxides	High High	N/A N/A
		Tank D-1088	Pu U SNM Acid	Oxides Oxides Several Grams Residue	High High Low Low	N/A N/A N/A Liquids
		Tank D-1089	Pu U SNM Base	Oxides Oxides Residue Oxides Oxides Several Grams Residue	High High Low High High Low Low	N/A N/A Liquids N/A N/A Liquids
		Tank D-1095	Pu	Oxides	High	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
46	Room 164 Lab Area	Tank D 91N	U	Oxides	High	N/A
			SNM	Several Grams	Low	N/A
		Tank D 91S	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
		Gloveboxes 49 and 50	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
		Gloveboxes 12 and 13	Pu	Oxides	High	N/A
			U	Oxides	High	N/A
			Pu	Oxides	High	N/A
			U	Oxides	High	N/A
		Gloveboxes 104 through 107	Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			U	Oxides	High	N/A
			MFP	Oxides	High	N/A
		Glovebox 108	ACM	TSI	High	N/A
			Be	Oxides	High	N/A
			Pb	Gloves	Low	N/A
		Glovebox 109	Pu	In Solution	Low	Oxides
			Pb	Gloves	Low	N/A
		Glovebox 110	Acid	Liquid	High	N/A
		Glovebox 111 through 115	Pu	In Solution	Medium	Oxides
			Pb	Gloves	Low	N/A
		Glovebox 60	Acid	Liquid	High	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Glovebox 61	Acid	Liquid	High	N/A
		Glovebox 62	Pu Pb Acid	Oxides Gloves Residue	High Low Low	N/A N/A Liquids
		Gloveboxes 63 through 66	Pu Pb Acid	In Solution Gloves Liquid	Low Low High	Oxides N/A N/A
		Glovebox 67 through 69 and 72 through 74	Pu Am U MFP Be Pb Acid Base	Oxides Oxides Oxides Oxides Oxides Gloves Residue Residue	High High High High High Low Low Low	N/A N/A N/A N/A N/A Liquids Liquids
		Gloveboxes 79A 79B 80A and 80B	Pu Pb Acid	In Solution Gloves Liquid	Low Low High	Oxides N/A N/A
		Gloveboxes 81A and 81B	Pu Pb	Oxides Gloves	High Low	N/A N/A
		Gloveboxes 82A and 82B	Pu Am U Pb	Oxides Oxides Oxides Gloves	High High High Low	N/A N/A N/A N/A
		Gloveboxes 83A and 83B	Pu Am U Pb Acid Base	Oxides Oxides Oxides Gloves Residue Residue	High High High Low Low Low	N/A N/A N/A Liquids Liquids
		Glovebox 98 through 103	Pu Am U Pb	Clad Clad Clad Gloves	Low Low Low Low	N/A N/A N/A N/A
			Pu Pb Acid	In Solution Gloves Liquid	Low Low High	Oxides N/A N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
47	Room 151 Radiation Control Area	Room 151	Base N/A	Liquid	High	N/A
48	Room 153 Process Area	Gloveboxes 153A through 153E	Pu Am U MFP Pb Oil Acid Base	Oxides Oxides Oxides Oxides Plate Lubricants Residue Residue	High High High High m Low Low Low	N/A N/A N/A N/A Oxides PCB s Liquids Liquids
		Hot Cells 1 through 6	Pu Am U MFP Pb Cr Oil Acid Base	Oxides Oxides Oxides Oxides Plate In Solution Lubricants Residue Residue	High High High High m Low Low Low Low	N/A N/A N/A N/A Oxides Oxides PCB's Liquids Liquids
		Tank T 3	Pu Base	Oxides Residue	High Low	N/A Liquids
		Tank T-4	Pu Base	Oxides Residue	High Low	N/A Liquids
		Tank T 86	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank T-87	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank T 88	Pu Acid	Oxides Residue	High Low	N/A Liquids
49	157 Stock Room Area	Room 157	ACM	TSI	High	N/A
50	Room 158 Lab Area	Gloveboxes 158 North and 158 South	Pu Am	Oxides Oxides	High High	N/A N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Glovebox BX1	U Pb	Oxides Gloves	High Low	N/A N/A
		Glovebox BX2	Pu Am U Pb	Oxides Oxides Oxides Gloves	High High High Low	N/A N/A N/A N/A
		Glovebox BX3	U Pb	Oxides Gloves	High Low	N/A N/A
		Glovebox BX4	Pu Am U Pb	Oxides Oxides Oxides Gloves	High High High Low	N/A N/A N/A N/A
		Glovebox BX5	Pu Am U Pb	Oxides Oxides Oxides Gloves	High High High Low	N/A N/A N/A N/A
		Glovebox BX6	Pu Am U Pb	Oxides Oxides Oxides Gloves	High High High Low	N/A N/A N/A N/A
		Glovebox BX7	Am U Pb	Oxides Oxides Gloves	High High Low	N/A N/A N/A
		Glovebox BX8	Am U Pb	Oxides Oxides Gloves	High High Low	N/A N/A N/A
		Glovebox BX9	Pu Am U Pb	Oxides Oxides Oxides Gloves	High High High Low	N/A N/A N/A N/A
		Hood 2	Pu Pb	Oxides Gloves	High Low	N/A N/A
		Glovebox 663A through 663C	U Pu Pb	Oxides Oxides Plate	High High Medium	N/A N/A Oxides

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern		Potential Hazard not yet Identified
					Low	High	
		Glovebox 664	Oil	Lubricants			PCB s
			Pu ACM Pb Cr CFC's	Oxides TSI Plate In Solution Refrigerant	High High Medium Low Medium	N/A N/A Oxides Oxides N/A	
51	Room 149 Utilities Support Area	Rooms 149A 149B, 149C 149D 149E					
			ACM Oil	TSI Lubricants	High Low	N/A PCB s	
52	190 Deluge Process Area	Room 190 tank V 2					
			Pu U	In Solution In Solution	Medium Medium	Oxides Oxides	
53	Main Plenum Area	Room 280 280A 280B 281 281A 281B 282 282A 282B, 282C and 282D					
			Pu Am U MFP Acid Be	Oxides Oxides Oxides Oxides Residue Oxides	High High High High Low High	N/A N/A N/A N/A Liquids N/A	
54	283 HVAC Exhaust and Utilities Area	Rooms 283 283A, 283B, 283C 283D 283E 283F, 283G, 283H, 283I, 283J					
			Pb ACM Hg Oil	Lead Batteries TSI In Instruments Lubricants	Low High Low Low	N/A N/A N/A PCB s	
55	235 HVAC Supply and Utilities Area	Rooms 232, 233, 234, 235, 236 237 238 238A, 239, 240 240A, 240B, 240C, 240D, 240E, 240G					
			ACM Oil	TSI Lubricants	High Low	N/A PCB s	
56	249 HVAC Exhaust Chem Make-up and Utilities Area	Rooms 229 230 231 241 245 246 246A 247 248 249					
			Pu Am U SNM MFP ACM	Oxides Oxides Oxides Multiple Kilograms Oxides TSI	High High High High High High	N/A N/A N/A N/A N/A N/A	

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
			Cr Oil Acid Base CFC's	In Solution Lubricants Residue Residue Refrigerant	Low Low Low Low Medium	Oxides PCB's Liquids Liquids N/A
57	309 Tank Area	Tanks D-309E & D-309W	Oil	Lubricants	Low	PCB's
58	Corridors A D E G, H Stainwell 1 2,3 127 Utility Room and Tunnel Area		Pu U ACM Acid Base	Oxides Oxides TSI Residue Residue	High High High Low Low	N/A N/A N/A Liquids Liquids
59	Indirect/Direct Evaporative Cooling Area					
60	771 HVAC	Zones 1 and 2 HVAC	Oil	Lubricants	Low	PCB's
			Pu Am U SNM ACM Oil	Oxides Oxides Oxides Multiple Kilograms TSI Lubricants	High High High High High Low	N/A N/A N/A N/A N/A PCB's
61	774 Room 202 Process Area	Glovebox 5	Pu Am U Oil Pb Acid Base	Oxides Oxides Oxides Lubricants Gloves Residue Residue	High High High Low Low Low Low	N/A N/A N/A PCB's N/A Liquids Liquids
		Glovebox 6	Pu Am U Oil Pb Acid Base	Oxides Oxides Oxides Lubricants Gloves Residue Residue	High High High Low Low Low Low	N/A N/A N/A PCB's N/A Liquids Liquids

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Glovebox 7	Pu Am U Pb	Oxides Oxides Oxides Gloves	High High High Low	N/A N/A N/A N/A
		Glovebox 8	Pu Am U Pb Acid Base	Oxides Oxides Oxides Gloves Residue Residue	High High High Low Low Low	N/A N/A N/A N/A Liquids Liquids
		Tank 1A	Pu SNM Cr Base	Oxides Several Grams In Solution Residue	High Low Low Low	N/A N/A Oxides Liquids
		Tank 1RF	Pu SNM Cr Base	Oxides Several Grams In Solution Residue	High Low Low Low	N/A N/A Oxides Liquids
		Tank 2F	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank 3	Pu	Oxides	High	N/A
		Tank 4L	Pu Acid	Oxides Residue	High Low	N/A Liquids
		Tank 4R	Pu SNM Base	Oxides Several Grams Residue	High Low Low	N/A N/A Liquids
		Tank 70	Pu SNM	Oxides Several Grams	High Low	N/A N/A
		Tank 71	U SNM	Oxides Several Grams	High Low	N/A N/A
		Tank 73	Pu U SNM Base	Oxides Oxides Several Grams Residue	High High Low Low	N/A N/A N/A Liquids



# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
62	Room 241 Process Area	Tank T 201				
		Tank T 202	Pu SNM	Oxides Several Grams	High Low	N/A N/A
		Tank T 203	Pu U SNM	Oxides Oxides Hundreds of Grams	High High Medium	N/A N/A N/A
		Tank T-204	Pu SNM	Oxides Hundreds of Grams	High Medium	N/A N/A
		Tank T 205	Pu U SNM	Oxides Oxides Several Grams	High High Low	N/A N/A N/A
		Tank T 206	Ferrous Sulfate	Reagent Chemical	Low	N/A
		Tank T-207	Magnesium Sulfate	Reagent Chemical	Low	N/A
		Tank T-208	Calcium Chloride	Reagent Chemical	Low	N/A
63	774 Room 250 Storage Area	Room 250	Puriflock	Reagent Chemical	Low	N/A
			N/A No hazardous concerns			
64	774 Room 212 Storage Area	Room 212				
			N/A No hazardous concerns			
65	774 Room 103 Process Area	Glovebox 13	Pu Am U Pb Oil Acid Base	Oxides Oxides Oxides Gloves Lubricants Residue Residue	High High High Low Low Low Low	N/A N/A N/A N/A PCB s Liquids Liquids
		Glovebox 355	Pu Am U Pb	Oxides Oxides Oxides Gloves	High High High Low	N/A N/A N/A N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank T 40	Oil	Lubricants	Low	PCB s
			Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
		Tank D 351	Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			U	Oxides	High	N/A
		KOH Receiver Tank	SNM	Several Grams	Low	N/A
			Pu	Oxides	High	N/A
			Base	Residue	Low	Liquids
		Glovebox 9	Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			U	Oxides	High	N/A
	66 774 Room 102 Process Area	Glovebox 10	Pb	Gloves	Low	N/A
			Oil	Lubricants	Low	PCB s
			Acid	Residue	Low	Liquids
		Glovebox 11	Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
		Glovebox 12	U	Oxides	High	N/A
			Pb	Gloves	Low	N/A
			Oil	Lubricants	Low	PCB s
		Glovebox 12	Acid	Residue	Low	Liquids
			Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
		Glovebox 12	Am	Oxides	High	N/A
			U	Oxides	High	N/A
			Pb	Gloves	Low	N/A
		Glovebox 12	Pu	Oxides	High	N/A
			Am	Oxides	High	N/A
			U	Oxides	High	N/A
		Glovebox 12	Pb	Gloves	Low	N/A
			Oil	Lubricants	Low	PCB s
			Acid	Residue	Low	Liquids
		Glovebox 12	Base	Residue	Low	Liquids
			Pu	Oxides	High	N/A
			Am	Oxides	High	N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank T 5	Oil Acid Base	Lubricants Residue Residue	Low Low Low	PCBs Liquids Liquids
		Tank T-9	Pu Am U SNM Acid Base	Oxides Oxides Oxides Several Grams Residue Residue	High High High Low Low Low	N/A N/A N/A N/A Liquids Liquids
		Tank T 10	Pu Am U SNM	Oxides Oxides Oxides Several Grams	High High High Low	N/A N/A N/A N/A
		Tank T 11L	Pu Am U SNM	Oxides Oxides Oxides Several Grams	High High High Low	N/A N/A N/A N/A
		Tank T-11R	Pu Am SNM	Oxides Oxides Several Grams	High High Low	N/A N/A N/A
		Tank T 12	Pu Am SNM	Oxides Oxides Several Grams	High High Low	N/A N/A N/A
		Tank T 74	Pu Am SNM Acid Base	Oxides Oxides Several Grams Residue Residue	High High Low Low Low	N/A N/A N/A Liquids Liquids
		Tank T 210A	Pu Am U SNM Base	Oxides Oxides Oxides Several Grams Residue	High High High Low Low	N/A N/A N/A N/A Liquids
		Tank C 1	Pu Am U SNM	Oxides Oxides Oxides Several Grams	High High High Low	N/A N/A N/A N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
			Pu Am U SNM	Oxides Oxides Oxides Several Grams	High High High Low	N/A N/A N/A N/A
67	774 Room 210 Process Area	Glovebox 1	Pu Am U Pb Oil Acid Base	Oxides Oxides Oxides Gloves Lubricants Residue Residue	High High High Low Low Low Low	N/A N/A N/A N/A PCB's Liquids Liquids
		Glovebox 2	Pu Am U Pb Oil Acid Base	Oxides Oxides Oxides Gloves Lubricants Residue Residue	High High High Low Low Low Low	N/A N/A N/A N/A PCB's Liquids Liquids
		Glovebox 4	Pu Am U Pb Acid Base	Oxides Oxides Oxides Gloves Residue Residue	High High High Low Low Low	N/A N/A N/A N/A Liquids Liquids
		Glovebox 15	Pu Am U Pb Oil	Oxides Oxides Oxides Gloves Hydraulic Oils	High High High Low Medium	N/A N/A N/A N/A N/A
		Glovebox 206	Pu Am U Pb Oil Acid Base	Oxides Oxides Oxides Gloves Liquid Residue Residue	High High High Low Medium Low Low	N/A N/A N/A N/A N/A Liquids Liquids
		Tank 1	Pu U SNM	Oxides Oxides Hundreds of Grams	High High Medium	N/A N/A N/A

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank 2	Oil	Liquid	Medium	N/A
		Tank 7	Pu SNM Oil	Oxides Several Grams Liquid	High Low Medium	N/A N/A N/A
		Tank 8	Pu SNM Acid Base	Oxides Several Grams Residue	High Low Low Low	N/A N/A Liquids Liquids
		Tank 13	Pu Acid Base	Oxides Residue Residue	High Low Low	N/A Liquids Liquids
		Tank 14	Pu U SNM Oil	Oxides Oxides Hundreds of Grams Liquid	High High Medium Medium	N/A N/A N/A N/A
		Tank 374A	Pu U SNM Oil	Oxides Oxides Hundreds of Grams Liquid	High High Medium Medium	N/A N/A N/A N/A
		Tank T 102	Pu U SNM Oil	Oxides Oxides Hundreds of Grams Liquid	High High Medium Medium	N/A N/A N/A N/A
68	774 Room 200 Dock Area	Tank T 103	Pu SNM Oil	Oxides Several Grams Liquid	High Low Medium	N/A N/A N/A
		Glovebox 17	Pu SNM Oil	Oxides Several Grams Liquid	High Low Medium	N/A N/A N/A
69	774 Room 203 Process Area		Pu Am U Pb Oil Acid	Oxides Oxides Oxides Gloves Lubricants Residue	High High High Low Low Low	N/A N/A N/A N/A PCBs Liquids

# APPENDIX A - Building 771 Reconnaissance Level Characterization Report Process Equipment Hazard Analysis

Set Number	Room Or Area	Item or Object	Hazardous constituent	Physical / Chemical Form	Level of Concern	Potential Hazard not yet Identified
		Tank T-42	Base	Residue	Low	Liquids
70	774 Room 341 Utilities Area	Rooms 341 342 343 344 and exhaust plenum	Base	Residue	Low	Liquids
71	774 Room 441 Utilities Area	Room 441 and 442	Pu U Acid Base	Oxides Oxides Liquid Liquid	High High High High	N/A N/A N/A N/A
72	774 Room 320 Utilities Area	Rooms 321 321, 322	Pu U Pb Oil Acid	Oxides Oxides Plate Lubricants Liquid	High High Medium Low High	N/A N/A Oxides PCB s N/A
73	774 Rooms 200-300 Office Area	Rooms 204 205 207 208 301 302 303 304 305 and 306	Pu U Oil RCRA	Oxides Oxides Lubricants Liquid	High High Low Low	N/A N/A PCB s N/A
74	774 HVAC	Zone 1 and Zone 2 HVAC Ducts	ACM	TSI	High	N/A
75	771/774 Cluster Facilities	771 and 774 Structures and Cap	Pu U	Oxides Oxides		N/A N/A
76	771/774 Cluster Facilities	Utilities	TBD			
77	771/774 Cluster Facilities	Out Buildings	TBD			
78	771	Room 181A Size Reduction	TBD			
79	771	Room 114 and 114A Process Rooms	TBD			
80	771	room 183 Package counter	TBD			
81	771	771A Out Buildings	TBD			